
FIRST REPORT

OF THE

SELECT STANDING COMMITTEE

ON

PUBLIC ACCOUNTS

IN REFERENCE TO EXPENDITURE ON THE

CANADIAN PACIFIC RAILWAY

BETWEEN

FORT WILLIAM AND RED RIVER

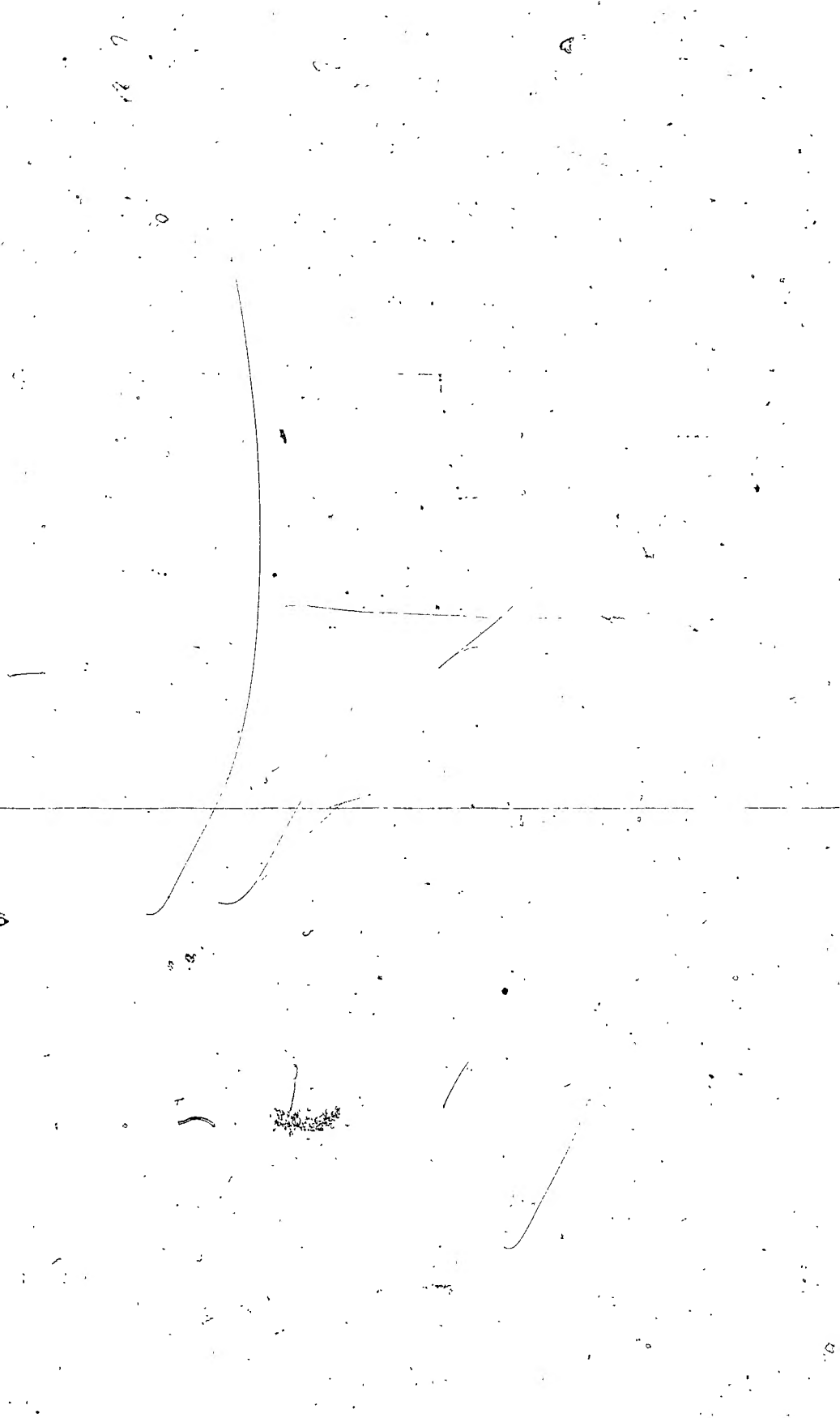
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OTTAWA:

PRINTED BY MACLEAN ROGER & CO., WELLINGTON STREET.

1879.



REPORT.

THE SELECT STANDING COMMITTEE ON PUBLIC ACCOUNTS beg leave to present as their

FIRST REPORT

The Report of their Sub-Committee to whom was referred the investigation of all expenditure connected with the Pacific Railway and Telegraph contracts, and the expenditure on the Fort Frances Locks; together with the evidence taken, and the documents submitted to them.

All which is respectfully submitted.

GEORGE A. KIRKPATRICK.

Chairman.

RAILWAY COMMITTEE ROOM, HOUSE OF COMMONS,

Ottawa, 8th May, 1879.

REPORT OF SUB-COMMITTEE.

The Sub-Committee of the Select Standing Committee on Public Accounts, to whom was referred the investigation of all expenditure connected with the Pacific Railway, and Telegraph contracts, and the expenditure on the Fort Frances Locks, beg leave to report,

That, owing to the pressure of other duties and the limited time given for the large enquiries embraced in the resolution, they have deemed it necessary to confine themselves to that portion of it which has reference to the construction of the Pacific Railway between Fort William and Red River.

The Committee submit the evidence taken before them of Mr. Fleming, Chief Engineer; Mr. Marcus Smith, Acting Chief Engineer; Mr. Trudeau, Deputy Minister of Public Works; Mr. Braun, Secretary of Public Works Department; Mr. Rowan, Resident Engineer in charge of Pacific Railway construction; Mr. Carre, Engineer in charge of Section 15; and the Hon. Mr. Mackenzie, with the reports and statements connected therewith.

Although the papers may seem formidable, it is believed that they contain matter which is well worthy of careful perusal and consideration.

The information obtained cannot be fairly summed up or condensed within the limits which may be allowed for a report, and the Committee will only attempt to deal with its general tenor and more salient points.

The enquiry has reference to four contracts for the construction of sections of the Pacific Railway between Fort William and Red River, divided as follows:—

1. Number 13.—Sifton, Ward & Co., contractors. Excavation, grading and bridging, westward from Fort William to Shebandowan, 45 miles. The line was afterwards changed, and construction on this contract ceased at Sunshine Creek 32½ miles from Fort William.

2. Number 25.—Purcell, Ryan & Co., contractors. Excavation, grading and bridging, westward from Sunshine Creek to English River, 80 miles; and track-laying and ballasting from Fort William to English River, 112½ miles.

3. Number 14.—Sifton & Ward, contractors. Excavation, grading and bridging, eastward from Red River to Cross Lake, 77 miles.

4. Number 15.—Sutton, Thomson & Whitehead, contractors. Excavation, grading and other works, eastward from Cross Lake to Keewatin, 38½ miles; track-laying and ballasting, from Red River to Keewatin, 113½ miles.

These contracts embraced 225½ miles of construction.

Statements showing the details of the several tenders, the work done on each contract, and the estimates of work required to complete them; and also statements showing a comparison of the cost of construction upon tenders accepted as executed, and estimated with other tenders for the same contract, are given in the Appendix.

The first series of statements show that except on Number 13, which was not completed in consequence of the change of line, and cannot therefore be tested, there has been in each case a very large increase of cost beyond the amount of the tender. As to the three others the result will appear to be as follows:

NUMBER 25.

Amount per schedule.....	\$1,037,061 00
Work executed to 30th Nov., 1878..	\$1,310,200 00
Work to be done.....	74,439 00
	<u>1,384,639 00</u>
Increase 32 per cent.....	<u>\$347,578 00</u>

NUMBER 14.

Amount per schedule.....	\$402,950 00
Work executed to 25th February, 1879.	\$658,849 00
“ to be done.....	63,825 00
	<u>722,674 00</u>
Increase about 80 per cent.	<u>\$319,724 00</u>

NUMBER 15.

Amount per schedule.....	\$1,594,085 00
Work executed.....	\$1,279,982 00
“ to be done.....	1,245,043 00
	<u>2,525,000 00</u>
Increase about 60 per cent.....	<u>\$930,915 00</u>
Whole amount of above tenders.....	\$3,034,096 00
Work done and estimated to complete the contract	<u>4,632,313 00</u>
Total increase over 52 per cent.	<u>\$1,598,217 00</u>

The causes of the increase will be found by examining the discrepancies between the original schedule of quantities upon which the contract was based and the quantities reported, and estimated upon the contract itself.

In Contract No. 25, the earth excavation estimated in the bill of works at 1,000,000 cubic yards was taken at 33 cents a yard. The work as executed is 1,970,000 yards, an increase of nearly 100 per cent. It is noteworthy that in Con-

tract No. 13, of which this is in part a substitute, the earth excavation was taken ten cents a yard lower, namely, at 23 cents. The bill of works of No. 25 required 10,000 yards of loose rock excavation. The contract price is 90 cents. The work as executed is 100,000 yards. In Contract No. 13 the price was 50 cents a yard; 7,870 cubic yards of tunnelling, 15 cubic yards lineal foot, at \$9 a yard, and 83,102 cubic yards of widening of banks at 38 cents, increase the cost of No. 25 \$101,408. Neither of these items were in the original schedule. The solid rock excavation taken at \$1.50 per cubic yard, of which 240,000 yards was in the original schedule is reduced to 76,800 yards. This was taken in Contract 13, at \$1.25, both rates are said to be very low. Of ballasting the schedule called for 180,000 yards; 198,000 yards had been done, and it is estimated that 100,227 yards more would be required. It was taken at 38 cents a yard. It is in evidence that this is a high price. In Contract No. 15 the price is 33 cents. Neither Mr. Fleming nor Mr. Smith seem to be able to account for, or explain satisfactorily the cause of the alarming increase in the work on this contract or in the others. The work on Section 25 is to be re-measured.

Contract No. 15, shows the largest discrepancies between the schedule of quantities and the work actually performed and now estimated to be required for its completion.

The main work of this contract is the grading between Cross Lake and Keewatin, a distance of 36½ miles. Doubtless, in order to facilitate it and to give easy access to the line, the contract included the ballasting and tracklaying of the line from Selkirk to Cross Lake where it connected with the western end of the line included in No. 15.

Much vacillation seems to have marked the consideration of plans for this formidable work, and, at last, it was decided to take tenders upon a plan which involved an enormous quantity of trestle-work in a section of country notoriously deficient in timber. This plan, it will be seen, although apparently adopted after long deliberation, was not satisfactory, and a radical change was recommended by the engineers very soon after work on the contract was begun.

The history of Section 15 is partly to be found in a return to Parliament brought down in 1877. The remainder is either stated or suggested in the evidence herewith submitted.

Tenders for this work were advertised for in the winter of 1875.

The schedule for quantities then embraced 600,000 yards of solid rock excavation, 40,000 yards of loose rock, 900,000 yards of earth, and 8,000 feet of timber and planks; sixteen tenders were received ranging from \$997,892 to \$3,082,070.

From the schedule it will be seen that a permanent roadway was contemplated involving a large quantity of rock excavation, heavy earth embankments, and but little timber. The work was not given out upon these tenders.

A new schedule of quantities was prepared in April, 1876. This embraced 320,000 yards of solid rock excavation, 30,000 yards of loose rock, 80,000 yards of earth and no timber.

This proposed letting is not mentioned in the return to Parliament. From Mr. Marcus Smith's evidence before the Committee, it will be seen that the schedule of quantities is very "meagre," it was not to complete the line but only to take out the excavations and leave the filling up of the gaps between for a subsequent tender.

For this letting eight tenders were received varying from \$935,025 to \$1,616,450; the contract was not given out. Finally in September, 1876, upon a third bill of works or schedule, which Mr. Smith tells us was substantially the same as the second with the addition of a large quantity of timber, and track-laying and ballasting, twenty tenders were received, ranging from \$1,443,175 to \$2,199,125, and one of \$2,950,000, all of which are given in detail in the appendix.

The lowest bidders, Messrs. Macdonald & Co., wrote to the Government on 13th October, that they based their calculations on the completion of the contract for grading and bridging of Section 14 by August 1877, which would enable them to lay track on that section, and to get in timber, ties and supplies from Red River. This consideration, they say induced "a lower offer by 25 per cent.," but learning that the

time for finishing the grading and bridging of 14 had been extended, so that it would take two years before it could be made available for carrying men and supplies, they asked to be made good for the difference between getting them in after August 1st, 1877, by the most available route, and by rail over Section 14 until such section should be completed, and they say, "It would be imprudent for us to enter into the contract, unless we were put in possession of the advantages which the specifications and forms of tender led us to believe and base our calculations upon.

Mr. Braun replies on the 14th of October that the Government cannot consent to the modification of any conditions laid down in the specifications, and requests immediate signing of the contract.

On the 16th, Messrs A. P. Macdonald & Co., write:—

MONTREAL, 16th October, 1876.

SIR,—In reply to your communication of the 14th instant, we beg to state that we cannot enter into contract for Sections 14 and 15 Canadian Pacific Railway, on account of reasons stated in our letter of the 13th instant.

We therefore most respectfully decline to sign said contract, but beg to add [that if the Minister of Public Works should see fit to change his decision we would most gladly enter into contract.

We have the honor to be, Sir,—

Your obedient servants.

(Signed)

A. P. MACDONALD,
ROBERT KANE.

F. BRAUN, Esq.,
Secretary Public Works Department,
Ottawa.

On the 17th October. Messrs. Martin and Charlton, contractors, Montreal, whose bid \$1,562,090 was next highest, were asked by the Government to put up 5 per cent. deposit in connection with the contract.

On the 25th, Mr. Marcus Smith telegraphed from Winnipeg.

(Telegram.)

MONTREAL TELEGRAPH CO.

FROM WINNIPEG,

25th October, 1876.

To F. BRAUN.

If contract fifteen not let it may be better to defer it till my return. Last improvement in location and gradients materially alter quantities, reducing timber-work, and slightly increasing rock. Leave here to-morrow or next day.

(Signed) MARCUS SMITH.

No attention seems to have been paid to the telegram.

Mr. Charlton, for his firm negotiates and makes sundry propositions, offering security of various forms, especially land upon Decker Park, in Côté St. Louis. To these propositions the Government reply:—

OTTAWA, November 28th, 1876.

GENTLEMEN,—With respect to the property Decker Park, which you offer as security in connection with Section 15, of Canadian Pacific Railway, I beg to state

that, having procured valuation of the same, we cannot accept it as security for the contract in question, and that the Department will have to pass to the next tender.

Your obedient servant,

(Signed) F. BRAUN,
Secretary.

E. J. CHARLTON & Co.,
Montreal.

At this juncture Mr. Joseph Whitehead writes to the Hon. Alexander Mackenzie, as follows:

OTTAWA, November 28th, 1876.

DEAR SIR,—It is the general impression outside, that you are going to give the contract, Section 15. to Charlton & Co., and he is going to turn the contract over into the hands of some Americans from New York, and according to the feeling, you are going to make a great mistake if you allow such a thing to be done, as it is well known that Charlton says that he never intended to put a spade into the contract, Section 15; he only wants to make some money out of it, the same way he did out of the Grenville Canal, when he sold out to Cooke and Jones, and got six thousand dollars.

Now if you will give the contract, Section 15, to Sutton and Thompson's tender, I will guarantee that the grading, track-laying, and ballasting shall be done and completed; the engine into Section 15 by the month of August next; and further, the whole of Section 15 shall be finished, completed, by the fall 1878, and for every day over and above, if any, you shall have the best of security that the Government shall be paid five hundred dollars per day for every day over and above the two dates named above, and this is the only way to put some life into the Pacific Railway, as there has been no life in it yet.

Now, I hope you will pardon me for taking the liberty of writing you this note, as I have no other object in view than to let you know the feeling outside, as you must admit that Sutton & Thompson's tender is not an extravagant one, only I know—what I have said in this note can be done.

I remain,

Your obedient servant,
(Signed) JOSEPH WHITEHEAD.

Honorable ALEXANDER MACKENZIE.

Messrs. Charlton & Co. again offer security, 1st December, in real estate, and add that they can "also put up the bonds, jointly and severally, of William Beard (a millionaire), Brooklyn; W. H. Beard, Brooklyn; Justice Arnold, Oneida; Clinton Stephens, Brooklyn, as additional guarantees, these latter gentlemen being interested with us in our enterprise."

On the 21st Charlton writes to the Department:—

MONTREAL, 21st December, 1876.

SIR,—I have the honor to acknowledge the receipt of your letter of 19th inst., directing me to furnish additional paper and mortgage registrations as therein detailed, in connection with the required security for the completion of the 15th Contract, Canadian Pacific Railway.

"I have met with so many unfortunate difficulties in procuring security for so large a sum, so as to satisfy the demands of the Government, and have been so worried and disheartened by the difficulties of the position in which I found myself, and consequent failing health, that I am reluctantly obliged to say that I cannot now undertake so serious an enterprise, more especially as all the most experienced men whose advice or assistance I have asked, have convinced me and my friends that the work cannot satisfactorily be performed for the price tendered for."

I beg, therefore, to ask that the Honorable the Minister of Public Works will "allow me to withdraw my tender," and will please to return to Mr. Beard of Brooklyn, who proposed to join in the work, his deposit; and also return to me the papers which I deposited as given to make up the balance of the security required.

I have the honor to be, Sir,

Your obedient servant,

(Signed) E. J. CHARLTON.

F. BRAUN, Esq.,

Department of Public Works.

On the 26th Baird, Arnold & Stephenson, telegraph (from New York):

F. BRAUN,

Department of Public Works,

Can you state deficiency of Charlton's security on Section 15?

(Signed) BAIRD, ARNOLD & STEPHENSON.

27th December, 1875.

Mr. BRAUN Replies:

Charlton has withdrawn his tender.

(Signed)

F. BRAUN,
Secretary.

The following correspondence closes the negotiation, and it will show that Mr. Charlton had several partners who were ready to furnish the security which he says he could not obtain.

(From New York.)

28th December, 1876.

Mr. TRUDEAU,

Department of Public Works.

We hear that Charlton has thrown up Section 15; We offer to put up balance or security required; went at his request to Montreal to meet him; stayed three days, could not find him; he gave us no chance; he has used us shamefully, and we understand, sold to higher tenders. Could we put up cash security and take it on his tender?

(Signed) BAIRD, ARNOLD & STEPHENSON.

(New York.)

28th December, 1876.

BAIRD, ARNOLD & STEPHENSON.

The parties who signed the tender having retired, the Department cannot deal with proposed partners who did not sign the tender.

(Signed)

F. BRAUN,
Secretary.

MONTREAL TELEGRAPH COMPANY,
27th December, 1876.

(By telegraph from Montreal.)

F. BRAUN,
Public Works Department—

Disension from within, added to *extraordinary pressure from without* has left no alternative but withdrawal.

(Signed) E. J. CHARLTON,

OTTAWA, 29th December, 1876.

SIR,—*Re* Section 15, Canadian Pacific Railway, I have just learned with much surprise through your Department that E. J. Charlton has withdrawn from our joint tender to build said Section 15, Canada Pacific Railway. His withdrawal was without my knowledge or consent.

I am prepared to deposit the security required by the Government, and am prepared to perform the work mentioned in or contemplated by said tender.

And I now offer to comply with the conditions and requirements of the Government, as specified in the advertisement calling for tenders for said work, and, in our said tender, I protest against any and all acts depriving me of said contract.

Trusting that justice will be done me in the premises.

I have the honor to be, Sir,

Most respectfully yours,

(Signed) PATRICK MARTIN.

To the Honorable
Minister of Public Works of Canada,
Ottawa.

No reply seems to have been made to Mr. Martin's protest.

The next lowest bidders were Messrs. Sutton & Thompson, the acceptance of whose tender we have seen was strongly commended by Mr. Whitehead; a memorandum signed by Mr. Mackenzie, in the following words, recommends that their tender be accepted.

30th December, 1876.

(Memorandum)

The undersigned reports that tenders having been invited for construction of Section No. 15, Canadian Pacific Railway, twenty-one have been received at schedule rates, which, when extended, are found to vary between \$1,413,175 and \$2,950,000.

That the firms whose tenders are first and second lowest, respectively, Messrs. McDonald & Kane and Messrs. Martin & Charlton, are unable to furnish the necessary security.

That the third lowest tender is from Messrs. Sutton & Thompson, of Brantford, amounting to \$1,594,155 (one million five hundred and ninety-four thousand one hundred and fifty-five dollars).

That this firm are prepared to make the necessary five per cent. cash deposit, and propose to associate with themselves Mr. Joseph Whitehead, contractor, of Clinton, Ontario.

The undersigned, therefore, recommends that the tender of Messrs. Sutton & Thompson be accepted, and that they be allowed to associate Mr. Whitehead with themselves accordingly.

Respectfully submitted.

(Signed)

A. MACKENZIE,
Minister Public Works.

15 CONTRACT, CANADA PACIFIC RAILWAY.

27th January, 1877.

SIR,—Referring to my letter of the 30th ult., enclosing a cheque for \$80,000 deposited by Messrs. Sutton, Thompson & Whitehead as security for the performance of the above contract, I now beg to state that titles to lands and property have been furnished as security in lieu of the cash deposit, and that, by the advice of the Department of Justice, the \$80,000 may now be given up.

You will, therefore, be pleased to give the sum up to the depositor, the Hon. Donald McDonald.

I have the honor to be, Sir,
Your obedient servant.

(Signed) F. BRAUN,
Secretary.

T. D. HARINGTON, Esq.,
Deputy Receiver-General,
Ottawa.

[The following Memorandum was, on motion of Mr. Mackenzie in Committee, ordered to be inserted here.]

(Memorandum.)

6th January, 1877.

The undersigned reports, for the information of Council, the following facts regarding Contract 15 of the Canada Pacific Railway:—

Tenders were received for this contract on the 20th September, and as soon as possible afterwards, Messrs. McDonald & Kane, the lowest tenderers, were notified of the acceptance of their offer of \$1,443,175. On the 13th October they asked for certain changes to be made which would involve a further and indefinite expenditure by the Government.

The Department declined to accede to this request, and on the 16th October they notified the Department that they were not prepared to proceed any further.

On the 17th October, Messrs. Charlton & Martin, who were the second lowest, were notified that their tender of \$1,562,090 was accepted, and they were called upon to make immediate arrangements for depositing five per cent. as security. On the 27th October they made tender of a mortgage on certain timber limits; on the 28th October they were notified that these securities could not be accepted, and that no further delay could be permitted.

On the 16th November, Messrs. Charlton & Co. offered mortgages upon certain property as security, and on the 21st November a lithographed plan of the property so offered, with a certificate of valuation of the same representing it to be worth \$83,250, was sent to the Department. On the 22nd November these mortgages and this plan was transmitted to Messrs. Darling & Valois, the Government valuers in Montreal, with instructions to ascertain the cash value of the property, exclusive of the encumbrances upon it. On the 28th November, Messrs. Darling & Valois reported that this property, if sold, would not realize more than about \$30,000. The Department accordingly declined to accept these mortgages on the ground of their insufficiency, and Messrs. Charlton & Co. were so notified on the 29th November. On the same day Charlton & Co. intimated to Messrs. Darling and Valois that they would offer additional security, and wrote to the Department on the 4th December to say that their securities would be completed on the 16th December. On the 11th December a firm from New York, named Baird, Arnold & Stephenson, made a cash deposit of \$20,000 for Charlton & Co., and promised to make good the remainder of the required security. The remainder was never, however, lodged either in cash or in mortgages which could be accepted, and on the 21st December Mr. Charlton wrote withdrawing the tender.

On the 28th December, Messrs. Baird & Co., of New York, wrote, complaining that Charlton had used them shamefully; that they had gone to Montreal to meet

him and had stayed there three days, but had been unable to find him; and they asked to be allowed to lodge cash security and to take the contract themselves, in accordance with the terms of Messrs. Charlton & Co.'s tender. It being contrary to proper practice and to the custom of the Department to allow such a proceeding, their request was not acceded to.

On the 28th December, Messrs. Sutton & Thompson, the third lowest, were notified that their tender of \$1,594,085 was accepted, and were required to deposit the necessary security. On the 29th December, P. Martin, one of Charlton's partners, lodged a protest against Charlton being allowed to withdraw his tender, and stated that it was done without his knowledge, and that he (Martin) was prepared to proceed. On the 30th December, the Honorable Donald McDonald, Senator, presented a letter to the Department from Messrs. Sutton & Thompson, in which they asked to be allowed to associate Mr. Joseph Whitehead with them in the contract. Mr. McDonald, at the same time deposited \$80,000, by his cheque, accompanied by a letter from the Honorable A. Campbell, stating that the cheque would be accepted upon the Consolidated Bank of Canada as security for the firm of Messrs. Sutton & Thompson; and was informed that the contract must be completed with the firm of Messrs. Sutton & Thompson, the original tenderers, and the deposit made in their name until it was so completed. On the same day, a contract was drafted and submitted to the Minister of Justice. When in the Department of Public Works, on the morning of the 30th December, Mr. McDonald's attention was called to a statement, in a newspaper of the previous day, to the effect "he or Whitehead, on behalf of Messrs. Sutton & Thompson, had paid Charlton a sum of money to withdraw his tender," when he stated that the report was entirely devoid of truth.

On the 5th January, the following telegram was addressed to the firm of Messrs. Sutton & Thompson:

"Messrs. SUTTON & THOMPSON,
"Brantford, Ontario:

OTTAWA, 5th January, 1877.

"I am directed by the Minister of Public Works to say that the Department has been informed by parties interested that the firm of Sutton & Thompson, or some person acting on their behalf, has paid Charlton & Co., or Mr. Charlton individually, a sum of money for withdrawing their tender for the construction of Section Fifteen, of the Canada Pacific Railway; and to ask if there is any truth in this matter.

"(Signed) F. BRAUN,
"Secretary."

On the morning of the 6th January, the following reply was received:—

"(Private.)

OTTAWA, 6th January, 1877.

"By telegram from Brantford, 6th, to F. BRAUN, Esq., Secretary Public Works Department.

"No truth whatever in the statement that we, or any person on our behalf, paid Charlton & Co., or Mr. Charlton individually, a sum of money for withdrawing their tender for construction of Section fifteen of the Canada Pacific Railway.

"(Signed) "SUTTON & THOMPSON."

It is not necessary to consider the effect which the Government might be disposed to give the circumstances alleged, if they proved to be true, as the pointed denial given by Messrs. Sutton & Thompson and by the Honorable Donald McDonald, leaves the Government free to act upon the rule which governs the letting of contracts. That rule has invariably been, when the lowest tender withdraws, to pass on to the next.

The letter of Mr. Martin, one of the principals of the firm of Messrs. Charlton & Co., already referred to, contains a statement that he is prepared to proceed to give the necessary security. But he did not tender any security, and as he had been given the opportunity for two months to do so, it would have been evidently useless to wait longer on his account, setting aside altogether the matter of the rupture of the firm of which he was a member.

The undersigned recommends, for the reasons assigned, that the contract be awarded to Messrs. Sutton & Thompson, as the next lowest tenderers for the work, and that they be allowed to associate Mr. Joseph Whitehead with them in the contract.

Respectfully submitted.

(Signed)

A. MACKENZIE,

Minister of Public Works

It is stated that Mr. Whitehead acquired the interests of Sutton and Thompson in Contract 75 soon after it was awarded, and here, it may be remarked, that your Committee do not wish to be understood in anything that may be said in this report to reflect upon the good faith of the contractors. They have not been heard before the Committee, the investigation being principally if not wholly confined to the system of letting out contracts and its practical results, for which the late Government must be held answerable.

On the 6th of November, 1877, Mr. Whitehead requests Mr. Rowan, the engineer in charge of the work on Sections 14 and 15, to submit to the Department a proposition for a radical change in the character of the work on Section 15, by which the timber for trestle-work, forming \$337,450 of this tender, would be mainly dispensed with and its place supplied by permanent structures of rock and earth, he states that he cannot procure a sufficient quantity of suitable timber in the country.

It seems evident that the trestle-work plan was ill considered and ill chosen; that it was adopted in a country where there was abundance of rock but no suitable timber, and the difficulties of carrying it out were apparent from the early stages of the work.

At Ottawa no notice of Mr. Whitehead's proposition appears to have been taken for several months. The attention of Mr. Smith seems to have been called to it by a report from Mr. Rowan in March, 1878, but he states that he considered the report and calculations of Mr. Rowan too theoretical and that he did not entertain them.

On the 22nd of May following, Mr. Rowan, then in Ottawa, having been there since the preceding January, writes to Mr. Fleming (see letter on page 32) strongly recommending the adoption of Mr. Whitehead's proposal which, he says, will involve additional cost in earth work of \$550,500, less trestle-work done away with, \$362,000; difference \$182,500, to which he adds \$70,000 for masonry and permanent structures, making the aggregate additional cost, upon his figures, \$258,500. He then makes a very curious compound interest account against the trestle-work and a calculation of a cost of renewing it with earth filling at 28 cents a yard, the contract price in this case being 37 cents, adds \$70,000 for masonry, and makes out, altogether, that the Department would be the loser by a trifle of \$125,182 in not accepting Mr. Whitehead's proposition. A simple interest calculation is also given which shows exactly \$103,617.54 in favor of the change. It is somewhat damaging to the accuracy of this calculation that the whole bill of timber in the tender amounted to \$337,450, and about \$38,680 worth has been or will be used, according to the returns and estimates, in the completion of the work, bringing down the saving in timber to \$299,270 instead of \$362,000, which is the basis of Mr. Rowan's calculations. Other far more important calculations were still more astray as will be seen further on.

Mr. Fleming returned in April, 1878, from an absence of several months in England, and on the same day on which Mr. Rowan's letter is dated, he wrote to the Department that "he is of opinion that it would be sound economy to accept Mr. Whitehead's offer."

Mr. Fleming left Ottawa to sail for England on the 23rd May, and remained absent until November. The changes proposed, as will be seen by referring to the Schedule in the Appendix, involve, in work done and work estimated to be done, the following results:—Solid rock excavations, increased from 300,000 yards to 525,646 yards—increase, 225,646 yards, at \$2.75=\$620,526; loose rock, increased from 30,000 yards to 60,000 yards—increase, 30,000 yards, at \$1.75=\$52,500; earth excavations, increased from 80,000 yards to 1,657,420 yards—increase, 1,577,420 yards, at 37 cents=\$583,645; amounting in all to \$1,256,801. Timber decrease, \$299,270, other decreases, \$16,616. Total increase of cost of work, \$930,915, instead of \$258,500, estimated by Mr. Rowan, notwithstanding a change of location, which is said to have saved about \$100,000.

This incredible addition to the original contract is included partly in work still to be performed. The statement annexed shows that work to the amount of \$1,279,972 had been executed, and that the sum of \$1,245,027.14 would be required to complete the contract upon the plan recommended by Mr. Fleming.

If, however, we are to accept the previous calculations as any criterion, a far larger sum may be involved than was shown in these startling figures.

It will be still more startling to find, as is shown by the evidence, that not only does the responsibility for the change of plan appear entirely vague and indefinite, but that it is denied in the evidence very stoutly that there has been any change at all which would not still permit the use of trestle-work without varying the cost of construction from what it would have been had the original plan been followed. It is, however, evident that a change has been made. Mr. Whitehead proposed it, Mr. Rowan urgently recommended it, Mr. Fleming approved of it and recommended it also, and appears not to have ascertained whether his recommendation was or was not accepted by the Government before he left the country. Mr. Mackenzie states that he first heard that the change had been made through a statement of Mr. Marcus Smith to the Senate Committee now in session, he having decided against it on full and frequent discussions of Mr. Fleming's letter in Council. (See questions Nos. 397 to 420, and the answers of Mr. Mackenzie.) It will there also be found that during long consultations between Mr. Mackenzie and Mr. Smith prior to the departure of the latter to look after the Railway work in the North-West as Chief Engineer in Mr. Fleming's absence, the matters to be attended to "were discussed exhaustively," but nothing was said in regard to the changes asked for by the contractor for Section 15, which had been recommended by the resident Engineer and approved of by the Chief, in Mr. Mackenzie's communications with Mr. Smith. A report was sent to the Council with the documents for consideration. It was determined, Mr. Mackenzie states, not to act upon Mr. Fleming's recommendation (Answer 405). Mr. Mackenzie states (Answer 407), that it was not the duty of anybody to inform Mr. Smith, when he took Mr. Fleming's place as Acting Chief Engineer, that the change recommended by Mr. Fleming had been discussed and disallowed, admitting that it was nobody's duty, it certainly seems strange that it was not in any way referred to in the conversations with Mr. Smith, for Section 15 was notoriously the most difficult and formidable of any that had been undertaken. The plan of construction had evidently been a matter of grave consideration, and on the 8th August, 1876, Mr. Farewell, for Sifton, Ward & Co., writing to Mr. Mackenzie, speaks of it as the "horrible section." No communication passed between Mr. Fleming and Mr. Smith in relation to it. In fact it is in evidence that, except in the most casual way, these gentlemen did not meet during the stay of the former in this country in the spring of last year when the letter of Mr. Fleming was written. Mr. Smith seems not to have been consulted in regard to it, although he had been upon the ground, and had recommended by telegram, as before stated in October, 1877, prior to letting the contract,

that the schedule of quantities should be modified, and he must necessarily have been better qualified to decide upon the imperfect data than one who had not seen the line.

Mr. Smith distinctly denies that he has authorized any radical change in the work except at one point where rock was substituted for earth, involving a change of a mile and a quarter of construction only, upon the principle since apparently adopted throughout by Mr. Rowan. A statement of Mr. Smith's, submitted on these and other points in controversy between the Engineer, is given herewith. The differences of statement between the Chief Engineer, the Acting Chief Engineer, the Engineer-in-charge and the Resident Engineer, are apparently irreconcilable. Mr. Rowan's letter, dated 7th May, in reply to Mr. Smith's statement, forms part of the Appendix.

It will be remembered that the late Government determined to construct portions of the Pacific Railway as a Government work.

We have seen that in regard to Section 25, there could have been no pretence to a careful survey; that the calculations of quantities cannot even by courtesy be called approximate, and that no one who has been before the Committee can account for the discrepancies between the work called for and the work performed, except upon the hypothesis that the quantities were made up for the tender without sufficient information. The calculations made under the direction of the late Mr. Hazlewood in respect to Section 13 cannot be found.

Mr. Carre states that he ran the lines over Sections 14 and 15 with eye and compass, and never went back over the line; a common bush profile was taken, and heights were scaled by it in Ottawa. He told Mr. Rowan that the estimate of quantities was mere guess work.

The 80,000 yards of earth-work in the schedule of quantities of Section 15 was intended to embrace only the stripping of rock, to be filled with trestle. There was no accurate data for the trestle-work which required accurate engineering like bridge work.

Mr. Rowan told Mr. Carre that the estimates for the contract must be made up immediately. Mr. Carre never gave them as an actual estimate either of work or cost.

Mr. Carre indicated that an estimate on Section 15, subsequent to that upon which the contract was made, and prior to that made up for the completion of the work, had been sent to Ottawa, and that Mr. Rowan's calculation as to increased cost of change recommended by him had been made up from that. Admitting the correctness of Mr. Rowan's estimate, \$258,000, would be properly deductible from the whole sum estimated to be required, for completing Section 15. This would leave an increase in the cost over that stated in the tenders, even if the plans of finishing by trestle-work were adhered to, of upwards of \$680,000.

Mr. Mackenzie states, in his evidence, that his desire in constructing the portions of the railway under consideration, was to get into the prairie country as speedily as possible; if the water stretches were to be utilized for that purpose, it is impossible to see how the object was to be furthered by extending the line from Port Savanne to English River, at the time it was constructed. A piece of road 42 miles long, costing at least \$1,200,000, which would involve a loss of interest for four years at five per cent. of \$240,000, and say \$20,000 for repairs, which makes \$340,000.

Mr. Fleming considers the extension to English River judicious, and states that as to the whole work, it was not commenced a moment too soon. Your Committee differ from these conclusions; from the first, because the intermediate section between English River and Keewatin, could not be completed for four or five years; and from the second, because no proper surveys had been made upon which to base contracts.

It will be seen that an expenditure approaching \$1,000,000 has been made upon surveys. It is to be hoped that they have been less superficial and inaccurate on other portions of the great route.

The country is committed to a vast outlay, and it is in the public interests to see that at the outset the safest and most economical plan is pursued. There will be dangers enough which cannot be avoided; we shall have ourselves to blame if we walk into others deliberately while seeing them plainly before us.

It is clear that contracts involving the expenditure of large sums of public money were given out without, in some cases, more accurate surveys than the running of trial lines, and that, in all cases, even approximate quantities were not ascertained. As to Contract 14, it is in evidence that there was no survey at all worth the name, before the contractors were on the ground, and that the engineers actually had not begun the work of locating the line before the contractors arrived. The consequences that may follow such a hasty system may be imagined. It cannot be possible that any Railway Company in the interest of subscribed stock would deal in such a manner.

Mr. Fleming fully justifies the system in question, and states unhesitatingly that he knows no better one that can be applied to our wants. He strongly condemns that adopted in the construction of the Intercolonial. Contracts for the completion of the line between Keewatin and English River, have been given out by the present Government upon tenders invited by their predecessors. The engineering difficulties in the whole country between Fort William and Red River are undoubtedly very great, and there will be many difficulties to be encountered in order to secure the completion of that work. It will be seen, however, from the evidence that the prices for which contracts for that work have been let compare favorably with those of the contracts under consideration.

Not being professional engineers, your Committee hesitate greatly in venturing to differ in opinion from the Engineer-in-Chief, in respect to the letting of the contracts upon Nos. 13, 25, 14 and 15, the construction of the road to English River, and the results of the tender system, which he advocates, but they are compelled to do so.

From the lessons conveyed in the figures that have been adduced in respect to all the contracts under examination, the Committee are forced to the conclusion that they were let without sufficient information as to the character and quantities of the work; that the principle of taking tenders upon calculations of quantities, which have been proved by the evidence to be much astray, is full of the very gravest danger, and cannot be reconciled with a due regard for the public interest; that in *inconsistent* tenders for various items of a schedule of quantities, there is the strongest temptation to increase the quantities on the one hand and reduce them on the other, the consequence of which it is needless to explain, that the assumption that the tender which may seem the lowest in the aggregate upon such a schedule of quantities, as is found in any one of the contracts in question, must be actually the lowest, is utterly fallacious.

Your Committee recommend that the investigation contemplated in the other branches of the resolution under which they were appointed, namely: into the construction and expenditure on the Telegraph Lines and Fort Frances Lock and Canal, which they were unable to take up, be made at a future time, in such a manner as Parliament may direct.

All which is respectfully submitted.

J. B. PLUMB,

Chairman.

Dissentients.

A. MACKENZIE.

T. OLIVER.

JOHN HAGGART.

ADOLPHE P. CARON.

D. BERGIN.

8th May, 1879.

MINUTES OF EVIDENCE.

RAILWAY COMMITTEE ROOM,
THURSDAY, 27th March, 1879.

Committee met.—Mr. KIRKPATRICK in the Chair.

Mr. MARCUS SMITH called and examined:

By Mr. Haggart:—

1. On what portions of the Pacific Railway had Messrs. Sifton & Ward contracts?—They had one contract, Section No. 13, from Fort William, Thunder Bay, to Lake Shebandowan.

2. Who had the contracts from Sunshine Creek to English River, and from Cross Lake to Red River?—From Sunshine Creek to English River was not Sifton & Ward's; it was Purcell & Ryan's.

3. Section No. 13 was from Fort William to Lake Shebandowan?—The contract, as originally made, was from Fort William to Shebandowan, but there was a change made in the location later on, and the contract was cut short at Sunshine Creek, 32½ miles instead of about 45 miles.

By Mr. Mackenzie:—

4. They had the option of making up the 45 miles out of the new location?—I was in British Columbia at the time; I am speaking merely as to the fact that they constructed about 32 miles of the original contract.

By Mr. Haggart:—

5. Thirty-two miles to where?—To Sunshine Creek. The original contract was from Fort William to Lake Shebandowan, a distance of about 45 miles. During the progress of the work there was a change made in the location diverging from Sunshine Creek, which is about 32½ miles from Fort William. The original contract consequently was only carried to Sunshine Creek; and I am informed the contractors had the option of taking the distance out of the new location; this they did not do, and the work was let to another firm.

6. Have you the original estimate of quantities under their contract?—Yes; but this estimate you will understand extends to Lake Shebandowan. I have tried to get the details of this so as to show that portion of the estimate from Fort William to Sunshine Creek, but I have failed to do so. The Engineer in charge, Mr. Hazlewood, is dead, so that we cannot find details by which to make a comparison between the original quantities estimated, and the quantities as executed.

By Mr. Mackenzie:—

7. Are they not in his office?—We cannot find them. I tried to last year, but could not find them.

By Mr. Haggart:—

8. Then there is no record in the office of the estimated quantity of work between Fort William and Sunshine Creek?—We have the estimates of each class of work from Fort William to Lake Shebandowan, but they are not given in such a way that I can divide them so as to show what the estimate to Sunshine Creek would be.

9. What are the quantities in the original estimate from Fort William to Lake Shebandowan?—Here is the Schedule on which the contract was let which gives the quantities. (Schedule produced.)

By Mr. Mackenzie:—

10. These Schedules were issued to all parties tendering?—Yes.

By Mr. Haggart :—

11. What was the original estimate for doing the work from Fort William to Lake Shebandowan?—The original estimate to Lake Shebandowan was \$406,194.

12. That was the contract price?—Yes.

13. How much did it cost to build the road from Fort William to Sunshine Creek?—\$331,978 is the amount which was paid.

By Sir A. J. Smith :—

14. What portion of the distance is that?— $32\frac{1}{2}$ miles as against about 45, which was the original length of the Section.

By Mr. Anglin :—

15. Were the difficulties of construction, and the amount of work on the $12\frac{1}{2}$ miles not built, greater or smaller than on the $32\frac{1}{2}$ miles which were completed?—I must glance at the profiles before I can give you that; but I haven't them here.

16. State it in a general way?—I should say the difficulties and the work were about the same in each. I have been over the line and I do not think there can be much difference any way.

17. What is the ascent?—The ascent is considerable.

18. Are not the works somewhat heavier?—I do not think they are; there are some portions of the line between Fort William and Sunshine Creek that are heavier in the original profile, but the works were not constructed on it. There was a change of line made altogether, and that is the difficulty in comparing the works.

By Sir A. J. Smith :—

19. Was the work done on schedule prices?—It was by a schedule of prices.

By Mr. Haggart :—

20. Do I understand you to say, that the quantities on the line of road completed by Sifton & Ward were no greater in proportion than they would have been for the whole line?—My impression is that they were not, but I cannot say without the profile.

21. How do you account for the fact that the sum paid for the $32\frac{1}{2}$ miles comes within so small a sum of the amount the contractors were entitled to under the contract for the whole 45 miles?—I cannot account for it.

22. The difference is only \$74,000?—I do not know how the original quantities were got out. I had nothing to do with them and I have no details of them, I can only speak as to the present quantities. The work as executed came directly under my eye. The contractors had a claim; I had to go over it, and in doing so I satisfied myself that the quantities as charged were very nearly correct.

23. For instance, in the original contract 30,000 cubic yards of solid rock excavation were set down, while for the $32\frac{1}{2}$ miles 40,141 yards were paid for?—That must have occurred from the change of location of the line; I think the change of location was made to improve the work; I know nothing of the original quantities.

By Mr. Bergin :—

24. You mean to lessen the quantities of rock excavations?—That is generally what a change of location is made for.

By Mr. Anglin :—

25. Was it also for lessening the work?—Yes, and it shortened the line.

26. And reduced the grades?—And improved the grades.

By Mr. Haggart :—

27. What is the meaning of this payment, "Additional cost of earth excavating, \$5,187"?—There was a claim made by the contractor for some compensation for the change which threw the line away from the means of communication. The first line went near a river; but the second line went through wet ground and they had to make roads into it; for that and other causes it cost more; I considered the matter carefully and I thought they were reasonably entitled to the amount.

By Sir A. J. Smith :—

28. Was the change an improvement?—It was an improvement, and it shortened the line; there must have been some error in the original quantities; that is the

conclusion I have come to because the changed location was an improvement and ought to have lessened the quantities.

By Mr. Haggart :—

29. It ought to have lessened the quantities?—Yes; and the cost. The improved line is a better line than the first.

30. But with less quantities in it?—Yes, and less quantities; so that there must have been some error in the first calculation.

31. Is there no way in which we can get at that information through the Department?—I have tried to find it myself; my attention was called to it by the late Minister of Public Works.

32. Can the engineer who made the estimate give the details?—Mr. Hazlewood, who was the engineer in charge, is dead; and I cannot find who made the estimate.

By Mr. Caron :—

33. There ought to be some means of getting at this information?—The matter did not come into my hands until the work was nearly finished; I was engaged at the time on the other side of the Rocky Mountains, consequently I have no knowledge of the matter.

By Mr. Mackenzie :—

34. How much did you pay additional, altogether?—I think it was something like \$10,000 or \$12,000; there were various claims; I considered them very carefully and sent in a report. As I have not been called upon to re-consider the report, I presume the contractors have been paid.

By Mr. Haggart :—

35. Do you think you can take from the profiles of the new road, the quantities of the work?—We can take out approximate quantities in a short time—a week or eight days—but they only would be approximate. I think the doubt as to the accuracy of the original quantities is that they were not taken out by the persons who made the surveys.

36. The engineers making the surveys did not take out the proper quantities?—The quantities have not been taken out, in some cases, by the engineers who made the surveys; to take out the quantities properly a knowledge of the ground, in addition to the mere surface line shown on the profile, is required because there is soft ground in some places, wet ground in others and side-hill ground in others; it therefore requires those who made the surveys to make a close approximate estimate of quantities.

37. In the original estimate what was the allowance for shrinkage of earth?—I have seen no details at all of this section.

38. Do you know what was the allowance for shrinkage on the amounts you have paid?—I do not know.

39. You well understand me; how much does the payment on the earth overrun the quantities as estimated?—I do not know exactly what quantities were estimated; the location line was changed.

40. You have signed receipts for them, upon which the payments for them were made monthly?—Yes, I signed according to returns made to me.

41. Were you ever over the work?—You will find that these receipts are signed according to returns made to me; I did not sign them from my own knowledge of the work; it is simply an official act; I examine the returns and see that they are carried out; I have nothing at all to do with preparing them.

By Mr. Mackenzie :—

42. You were over the line twice?—I was over the line twice.

By Mr. Haggart :—

43. Is it not the duty of some one to see that the quantities charged are in accordance with the original estimate?—It is the resident Engineer's duty to see that the quantities are correct.

44. Does not the Chief Engineer, if the quantities being charged are largely in excess of the estimate, make enquiries of the district Engineer to see why this is?—I do not know whether he did so or not in this case.

45. Do not you think it is his duty to do so?—It is; and a year ago, when I found the quantities were in excess of the estimate, I made all the efforts I could to discover the cause of the discrepancy.

46. What is the information you got as a result of these enquiries?—On this section I did not find that there was any unusual shrinkage; but on other sections there was more swampy ground, and the Engineer told me there would be a difference in the quantities there because of subsidence and shrinkage. The weight of the bank sinking into the earth on swampy ground, and the shrinkage of the materials of which the embankment is formed, would make the quantities largely in excess of what the profile shows.

47. You say that on this new location there was no shrinkage, and that the line was a more favourable one than the old line because the quantities were less?—I say I have no returns reporting any shrinkage.

48. I understood you to say just now that there was no shrinkage?—I said that from going over the line I did not observe soft ground where there was likely to be shrinkage to such an extent as on other sections, and I have had no return referring to shrinkage.

By Mr. Mackenzie :—

49. I think the line that went near the river had more excavations than the other line?—I think it had more; it was on sandy soil, and along the river were high banks.

50. That is my recollection of it; and it was one reason for changing the location, was it not?—Yes; the line was moved on to better ground.

51. Do you remember how much of the line was laid out by Mr. Murdock, and how much by Mr. Hazlewood?—I do not remember exactly; I have sent for a report of mine which has a sketch attached to it that will show.

By Mr. Haggart :—

52. What is the date of the final estimate of Messrs. Sifton & Ward?—December, 1877; but that did not include the whole amount claimed. I made a report on their claim subsequent to that date; I made it in August, 1878.

53. Do I understand that this \$300,000 was the full amount paid them?—That includes the sum awarded to them on examining their claim; it is the total paid.

By Mr. Mackenzie :—

54. Beyond that some \$10,000 or \$12,000 were for claims independent of quantities?—Yes.

By Mr. Haggart :—

55. What was the contract entered into by Purcell & Ryan?—I am not prepared to give that; I was simply notified to be prepared with evidence relating to Sections 13 and 14.

56. Are you aware, from general knowledge, that the amount paid to Sifton & Ward on their contracts was far in excess of the quantity estimated?—On Section 13 it is difficult to make a comparison between the original quantities estimated and the amount paid, but I am aware that on Section 14 the amount paid up to the present time is largely in excess of what was the estimate at the time of taking the contract.

57. What was the original estimate of Section 14?—The original estimate of contract 14 was \$402,950.

58. What was the amount paid?—The amount paid was \$647,135; to that has to be added \$75,000, estimated to complete the work on that contract, making a total estimate of \$722,135.

59. Was there a change in the location of the road?—Of a few miles.

By Mr. Plumb :—

60. What is the length of that line?—Seventy-six miles; there was a change in the location of some few miles, which I can show on the tracing; the country along that section is very much the same, though it is different to Section 13; on Section 14 it is generally a flat, prairie and swampy country.

61. From what points does this section run?—From Red River to Cross Lake is the whole contract. The change from the original location was made between White-mouth River and Brokenhead River, a distance of about 22 miles.

By Mr. Haggart:—

62. Did that change lessen or increase the work to be constructed?—It was made with the intention of lessening the work—so the resident Engineer tells me; the excesses in the quantities had been noticed, and the late Minister of Public Works called my attention to them before I went out last summer, and I tried every means in my power to ascertain the causes of these excesses; the contractors claimed that the change of location increased the work, but the resident Engineer says it did not.

63. I see there are large quantities of work in the original estimate which were not done at all; there are 20,000 lineal feet of drains estimated; there does not seem to be any of that work done; there is a lot of other work not done which was tendered for, and which, not being done, should have reduced the cost considerably under \$402,000. How is it possible that the cost should have been \$700,000; and how is it possible that the Engineer could have made such a mistake in the quantities?—I tried to find out what was the cause. The only explanation I got from the resident Engineer was that it was due chiefly to the increase in earth and rock; these are the two items in which the increase takes place.

64. But they ought to have been estimated for?—The conclusion I came to was that the work had not been properly estimated originally, and that some increase was due to the shrinkage. The ground was wetter and the swamps deeper than they expected, and the materials sank considerably.

By Sir A. J. Smith:—

65. At what time were the estimates made?—I do not know; the work only came into my hands about a year and a-half ago. I then asked Mr. Rowan—

By Mr. Mackenzie:—

66. He was in charge of the work?—Yes; I asked him for an explanation, and told him that the Minister was anxious to have an explanation of the causes of the excess in quantities.

By Mr. Bergin:—

67. I understand you to say that when you signed for these quantities it was not from actual personal knowledge of the quantities, but upon returns made to you?—It is stated so on the face of the returns I signed.

68. Then I understand you to say that the only explanation you can give of the increase in the amount paid to the contractors, was that there must have been a mistake in the original estimate of the quantities?—That is the only way I can trace it.

69. Has it ever occurred to you that the difficulty may not have been in the original estimate, but in the estimates furnished by the parties entrusted with the measurement, who gave the estimate every month?—It might occur in either way; it was my duty to examine into that when I went over the line. In signing the monthly returns in the office I have no check upon the quantities; but when I went over the line to enquire into the causes of the change in quantities, I made every enquiry, examined the books, and came to the conclusion that the quantities returned were correct.

70. Did you never by actual measurement verify the returns?—No; it would take one person a whole season to re-measure the work, and a great deal of it could not be re-measured. A number of engineers are employed, and I asked the engineer in charge to be responsible, and he was instructed to become responsible for the quantities.

71. Do you know whether he verified the returns every month?—I cannot say; there were forms and instructions issued by which the measurements were to be checked, and he was instructed to follow them.

72. It shows that there is something very wrong in the system?—The reason I came to the conclusion that the mistake was in the original estimate was this: I asked Mr. Rowan who made the original quantities; he said he did not know; I

said, "Were not you the Engineer in charge?" he said "Yes;" but they were taken out of his hands and made in the office at Ottawa, he did not know by whom. So that the first quantities were taken from the profile without any knowledge of the ground, and they would necessarily be far too small.

73. By whose instructions would this have been done?—I do not know; I was engaged on the other side of the Rocky Mountains when that took place.

74. Ought not these estimates to have been made by the Engineer there?—The estimates ought to have been made by the Engineer in charge, who should be responsible for the quantities; the quantities ought to be more closely approximated in the original estimate; of course, a swamp may turn out to be deeper than was expected, but the estimates should be closer than they have been in this case.

75. Were there any complaints made by the contractors that the parties who furnished the monthly estimates under-estimated the work?—Contractors do generally complain that work is under-estimated.

76. Have you any idea of the way in which contractors contrive to get good estimates each month?—You come now upon the system of letting the work. The Chief Engineer and I differ on that question; I think that the letting of the work without knowing the proper quantities, opens the door to all sorts of evils, to collusion, and to false quantities being returned. I disagree with the mode of letting contracts altogether, and, though I believe it is a common practice in America, I have never seen in any other part of the world contracts let without knowing the quantities approximately; the work is let on a general specification embracing all kinds of works; and quantities are given, but they are not close; in fact the engineers have told me that it does not matter whether they are close or not, the men would be paid for what they did. I replied that it mattered a great deal, and that the quantities estimated originally ought to agree with those executed.

By Sir A. J. Smith:—

77. Do you approve of the lump sum system?—Yes; but it requires thoroughly responsible engineers to get the quantities out; there is an interest under the lump sum system for the contractors to try to get the work done on the quantities estimated, but it is to the interest of contractors under the present system to increase the work.

By Mr. Mackenzie:—

78. On the other hand, unless you are sure of the quantities, you will have wild tenders?—I never knew bills of quantities guaranteed, but they must closely approximate; in whatever way the work is let there ought to be far more care taken in the original estimates; that work ought to be thorough, and the plans ought to be made before the work is let; as it is now the work is let before the plans are made, and it states in the specifications that the plans are to be made hereafter; it therefore stands to reason that the differences must be very great.

By Mr. Ryan (Montreal):—

79. The custom in England is entirely different, I believe?—In the letting of work in England there is a bill of quantities furnished just as we are furnishing now; the engineers do not guarantee their quantities, but they state that they believe them to be very nearly accurate, and the contractors have to satisfy themselves that they are accurate, and to become responsible for them.

80. And what if the quantities prove to be in excess?—Well, they very seldom prove to be; a little is generally added for contingencies so as to make it a bulk sum contract; and if the quantities are in excess the contractor gets the benefit of it; while, if they are under-estimated the contractor loses by it.

By Sir A. J. Smith:—

81. Mr. Fleming approves of the system under which the contracts are now let?—Yes, this is Mr. Fleming's system; there was a long fight between Mr. Brydges and Mr. Fleming regarding the system of letting contracts on the Intercolonial Railway.

82. Did Mr. Fleming prevail?—No, Mr. Brydges prevailed; and I believe a great deal of money was saved.

By Mr. Anglin:—

83. There have been no large claims for extras?—No further claim has been made under extras as far as I know.

By Mr. Bergin:—

84. You said there was a divergence from the original plan of Contract 14; by whose instructions was that made?—It was the Engineer in charge who advised the improvement of the line.

By Mr. Mackenzie:—

85. And to form connection with the other system?—Yes; and there was a change of grade.

By Mr. Bergin:—

86. Did the resident Engineer prepare an estimate for the new line?—Not that I am aware of; in changing the line he simply paid the contractors from month to month.

87. Then there was no estimate made of quantities?—Not that I am aware of; I am aware of nothing but the original estimate.

88. Then what check could the resident Engineer have over the charges made in the estimates of the contractors every month?—He depended upon the honesty of the assistant engineers; and that is the fault of the system.

89. Then it was not possible for you to have any check over the engineers or to verify the quantities when you made your visit, as there was no estimate for you to be guided by?—I examined the line and saw what had been done.

90. But there was nothing to guide you as to the quantities?—I had something to guide me; I could see where the length of the off-take ditches had been increased, which gave the reason there for increases of quantities; I could see where swamps had turned out different to what was represented on the profile; there were swamps which were not represented on the profile and where there had been a shrinkage in the embankments; there were other places where I found causes for an increase; but I could not account for so great an increase; I could account for a certain proportion of the increase but not for all of it.

By Sir A. J. Smith:—

91. Did you make these examinations under the direction of Mr. Mackenzie or Mr. Fleming?—Mr. Mackenzie.

By Mr. Mackenzie:—

92. I think you reported to me that in the Julius swamp they had to make large ditches for a mile or two?—Yes; there were two miles of large ditches, and that swamp required a very large quantity of earth. I have not been able to find out, but I presume that the original quantities were taken out in the office by, probably, an assistant, without any knowledge of the country; the difference between the quantities taken out in that way in this swamp alone would be many times the actual quantity of what would appear on the profile.

By Mr. Haggart:—

93. There are a lot of things as to which there can be no mistake; for instance, 200,000 lineal feet of under-drains were not made by which \$10,000 should be struck off the original estimate; 250,000 cubic yards of crib work in the original estimate—about the same quantity done; there are 6,000 lineal feet of timber which do not appear to have been used at all in the construction of the road; there are 55,000 lineal feet of timber, 12 inches square, estimated for and only 18,880 feet used; 1,000 lineal feet, 12 by 6, not used, and a lot of other things reduced in quantity or not used, which should reduce the original estimate to about \$350,000. Will you get all the information you possibly can on this, and as I believe other contracts are in precisely the same condition, I wish you would get information regarding the rest of them?—I will get all the information I can.

By Mr. Bergin:—

94. Will you also get information as to who directed the preparation of the estimates in the office here?—You would have to get Mr. Fleming to do that; for, as

I have told the Committee, at the time the contracts were let, I was on the other side of the Rocky Mountains.

MARCUS SMITH.

The Committee then adjourned.

WEDNESDAY, APRIL 9th, 1879.

Sub-Committee met.—MR. PLUMB in the Chair.

MR. MARCUS SMITH, C.E., called and further examined.

By Mr. Haggart:—

95. You were asked to bring down all the papers connected with Sifton & Ward's Contract, No. 14?—Yes; I have a Schedule of quantities executed.

96. Have you the Schedule of the original quantities?—This Schedule gives the original quantities estimated and the quantities executed.

(See Schedule annexed.)

97. The original contract, No. 14, was for \$402,950?—Yes.

98. And the amount executed by Sifton & Ward was \$647,135.40?—Yes.

99. Besides that, there was a portion of the contract which was performed by some one else?—A short length at the east end, adjoining Contract 15, was let to Mr. Whitehead.

By Mr. Mackenzie:—

100. It was let by themselves?—Yes; it was an agreement between themselves; the total contract was really Sifton & Ward's.

By Mr. Haggart:—

101. The total amount paid on Section 14 was \$732,135.40?—Yes.

102. Will you please explain the cause of the difference between the price paid and the amount estimated?—The only cause that I could ascertain was that there was a great deal more swampy ground than was anticipated when the original surveys were made; this swallowed up a great deal more earth than was expected; it was also necessary to extend and deepen the off-take drains.

103. Was there a change in the location?—There was a change; but it was not a very great change, and the country seemed to be about the same on both the original and second lines. The work was let on what we call a trial or preliminary survey, and it was not thoroughly surveyed for construction, but the change was made with the intention of straightening the line and lessening the work.

104. Did the change of location make any difference in the quantities of the work performed?—It was expected that there would be an improvement rather than otherwise. There was a difference of opinion between the contractor and the engineer on that point; the engineer said the change improved the line, but the contractor said it took it through softer ground. It certainly shortened the line, but the engineer says there was no practical difference in the character of the ground; I went over it, and I could not judge by the eye that there would be any difference in the lines; the country is practically the same.

105. By looking at the Schedule you will see that there seems to be large quantities of timber estimated for in the original contract which were not used; what is the reason of that?—I do not know the reason; there has been no change made in order to save timber. I think the cause of the difference is to be found in the original estimate in which the work was not very closely considered.

106. Are there other reasons?—My opinion is that the original estimate did not go very closely into the matter, and that quantities of timber were estimated for here and there that were not used.

By the Chairman :—

107. What do you mean by letting the work on a trial survey?—The trial survey is a preliminary survey without curves—a rapid survey across the country to ascertain the nature of the country; then the location line is an improvement made from notes taken in the preliminary survey.

108. Should not such a line be considered carefully and located as nearly as possible before the contract is let?—I think it is very desirable that the line should be surveyed as well as possible before the contract is let.

109. Then really, under this contract the original estimate of \$402,000 was merely a guess, and such an estimate is liable to any sort of increase if the line is not thoroughly surveyed?—Of course the estimate in this case would be liable to change.

110. The estimate cannot be correct at all; it must be only guess work?—If the line is not thoroughly surveyed you cannot give even an approximate estimate; there may have been some object in letting this particular work as soon as possible.

111. Is it the rule to let these contracts on such a basis as this contract was let upon?—Not generally; unless there is some special reason for haste.

112. Are there any other cases in which this has been done?—Well, sections 13 and 25 both appear to have been let on preliminary surveys.

By Mr. Mackenzie :—

113. Were all the contracts let on the same plan?—There were some elaborate surveys of section 15 made before it was let.

114. Section 13 was better surveyed than section 14, was it not?—It was not actually located; 13, 14 and 25 were let on what we call a preliminary survey, not on a thoroughly located line.

By Mr. Haggart :—

115. There is no shrinkage in the rock excavation?—No.

116. How is it possible that a mistake could be made in the estimate for rock excavations; the estimate I see is 10,000 yards, and the actual quantity performed is 34,442 yards?—The difference is far too great, but it is not easy to find the exact quantity of rock beforehand. A good deal of the rock does not appear on the surface; it comes out when you begin to dig.

117. I see there has to be added to it 5,000 yards, making four times as much rock as was estimated?—I can account for a considerable increase in this way. Before the contracts were let there was a preliminary survey run from Rat Portage to Red River. That was divided into two sections—section 14, which was on low ground except at the last mile; and section 15, which was subsequently let and was of a totally different character. Section 15 was on rocky ground and it was decided by the Engineer in Chief to adopt a maximum gradient going east of half a foot per hundred, or 26·40 to the mile. We found we could not get down low enough with that gradient, so we had to change the location of section 14 for a mile in order to make this lift, and it involved more filling.

118. But that would increase the filling and not the rock excavations?—It was in order to prevent the increase of the filling that we changed the location of the line; we preferred to cut the rock rather than largely increase the filling.

119. I asked you if the change in the location had increased the quantities?—In that portion of the line it did; it increased the quantity of rock.

120. Can you find the exact increase in quantities on that mile?—It will be difficult to do it here; they may have the information in the office, but at all events they have it at Winnipeg.

By Mr. Mackenzie :—

121. As I understand it the changes of location spoken of a few moments ago were further west than this?—The first change was further west.

122. And when you came to make elaborate surveys of 15 and 14 you found you had, in order to join them, either to make enormous filling or to cut through rock and make another line?—Exactly so.

By Mr. Haggart :—

123. The cutting was necessitated by lifting the grade up to meet the other?—Yes, and by shifting the location in order to avoid enormously heavy earth filling.

124. I would like to know the exact quantities in that last mile?—We will have to send to Winnipeg for them.

By Mr. Mackenzie :—

125. As I understand you when sections 14 and 15 came to meet, you found you would have to have a heavy embankment, and to avoid that you made a detour which involved cutting on section 14 near the junction?—Yes, and we made the detour in order to make a nearer balance between cutting and filling.

By Mr. Bergin :—

126. That cannot explain the 30,000 yards extra excavation?—No, that is only one portion of it.

127. Then the loose rock is increased from 3,000 to 36,720 yards?—Yes.

128. You say that a good deal of the rock excavation was caused by not knowing where the rock was, that is, that there was rock in some places where it was anticipated that there was only earth. Now the earth quantities are largely increased—from 1,000,000 to 1,700,000 yards; how do you account for that?—The explanation given to me by the engineer was, that the muskegs swallowed up a large quantity of earth.

By Mr. Bergin :—

129. Do you know that yourself?—I saw myself that there was a large quantity of earth swallowed up.

By Mr. Haggart :—

130. It is seventy-five per cent. on the whole line in excess of the quantity estimated?—The engineer told me that in some places it was 200 per cent. I believe the original survey was made in frosty weather, when the country was hard, so that there was not the same opportunity of judging of the character of the ground as there is at other times.

By the Chairman :—

131. Under whose direction was the original survey made?—Mr. Rowan is district engineer there; of course if surveys are made in frosty weather when the nature of the ground cannot be considered, and the quantities are taken from the profiles, there would be an enormous difference between the quantities estimated and the quantities executed.

By Mr. Bergin :—

132. Were the prices for rock and earth excavations very high?—No; I do not think so. I think on section 14 the prices are as consistent as any I have seen.

133. What were the prices on 14 and 15?—Solid rock excavation on 14, \$2; on 15, \$2.75; the earth on 15, 37 cents; on 14, 23 cents.

134. What is the price of loose rock on 15?—\$1.75.

135. What is the price of loose rock on 14?—\$1.

By Mr. Haggart :—

136. There is "extra hauling, \$4,783," how is it the contractors were allowed that?—That was for forming the station ground at Selkirk and there was no place to put the earth, so it had to be hauled a long way—it was for levelling off the station ground.

137. Had not they to do that under the original contract?—There is extra hauling allowed in the specification, after a certain length. Clause 16 in the specification states "The contract price for these several classes of excavation shall be taken to include the whole cost of hauling, except only extreme cases which may involve a haul of more than 1,200 feet. For every 100 feet of haul over 1,200 feet the contractor will be allowed at the rate of one cent per cubic yard, that is to say in the event of the haul being in any case 2,000 feet, eight cents per yard shall be added to the schedule rate."

138. There are \$4,783 for the extra haul?—That must be the whole value of the work, including the extra haul. That was a special piece of work. After letting the Pembina Branch it was found necessary to put up an engine-house there,

and the work was extended beyond what the contractor had to do; there was a special agreement made to do that work, and it was altogether extra.

By Mr. Mackenzie:—

139. That station ground was selected after the contract was let?—After the contractor had finished there and taken away his plant we had to prepare the ground for the station house.

By Mr. Haggart:—

140. When was this section finished?—21st November last, I think, is the date of the last official estimate.

141. The work is completed?—Yes; except the portion Mr. Whitehead is finishing.

142. Who was the resident engineer?—Mr. Thompson was resident engineer on section 14; but Mr. Rowan had general charge over the Pembina Branch and contracts 14 and 15.

By the Chairman:—

143. Would Mr. Rowan examine and pass upon this work before the estimate of work executed was accepted?—He sends a certificate every month to the office at Ottawa certifying to work done.

144. That would imply personal examination?—Not necessarily so.

By Mr. Mackenzie:—

145. But he makes such an examination as makes him personally responsible?—He is responsible; he makes an examination as often as he likes; the resident engineer is directly responsible to him and he is responsible to the Government.

146. I suppose you remember the difficulty we had to get Mr. Rowan to give his personal attention to the Pembina Branch?—Yes.

By Mr. Haggart:—

147. When these progress estimates were coming into the office the enormous quantities in excess of the estimates must have created a sensation; were there any special enquiries made about them?—Of course we did not know that the estimates were exceeding the original quantities until the quantities originally estimated had been reached; but when the increase was observed, Mr. Mackenzie called my attention to it, and told me he had called Mr. Fleming's attention to it. Mr. Fleming could not account for it, and Mr. Mackenzie instructed me to enquire specially into it.

148. Have you the report you made on that occasion?—I did not make a report, I questioned the engineers on the subject. Mr. Thompson showed me places where the quantities had been doubled and nearly trebled by the swallowing up in the swamps and by the shrinkage.

149. What day was it that you found the quantities were doubling and trebling?—I cannot remember the day, but it was last year sometime.

150. Then it was only discovered in 1878?—My attention was called to it in the fall of 1877 or the spring of 1878.

151. It must have been in 1877, because Sifton & Ward's contract was completed in 1878?—It must have been in the fall of 1877. I know my attention was called to it, and I went out in the spring of 1878.

152. My object is to see whether the Department was acquainted with all the facts of the shrinkage in these muskegs before the contracts were entered into on the other sections of the line?—The Department was acquainted with it before these last contracts, A and B, were let, but not before the preceding contracts were let.

By the Chairman:—

153. If I understand you, a large item in the increase in quantities on section 14 was explained by Mr. Thompson to be owing to the disappearance of earth in the muskegs?—Yes.

154. Was that explanation entirely satisfactory to your mind?—I think it would account for a very large increase; but there is a double cause: first, there is the subsidence in the muskegs, and then the material taken from the side ditches is of a light and spongy nature, and, when the water filters out of it, it shrinks a great

deal; Mr. Thompson told me that, in many cases, two yards of material taken out of a ditch would not make over one yard of embankment when it was solid.

155. Then I may ask you if that did not make the work much easier, it being easier to work the material?—I do not think that work could be done any cheaper.

156. But it could be done much more rapidly than ordinary earth excavation?—There is no doubt about that.

By Mr. Haggart:—

157. You say it shrinks when it is placed in the embankment?—Yes.

158. And I infer from what you say, that in the cutting from which it is taken it is not so solid—although it has been for thousands of years—as it becomes when it is put into the embankment?—It may appear strange, but it is so. We find that gravel and sand will make twice as much embankment as that kind of soil.

By the Chairman:—

159. A muskeg is a formation of moss on rock over which water has collected, and from which there is no opportunity for the water to escape?—The water is confined by rocks or clay banks from which there is no opportunity for it to escape. We have had to make long off-take drains to drain some of them; that has increased the quantities.

160. It is a formation peculiar to that country?—It is different from what we call a swamp in this country. A swamp here is generally made by the water being dammed up by fallen timber, and the ground is sound; but in a muskeg the ground is not sound—there is a large quantity of vegetable matter in the earth.

By Mr. Haggart:—

161. Who located section-14?—I do not know the person who located it; but it was located under the direction of Mr. Rowan.

162. How often was it gone over—only once?—I do not know; I had not anything to do with it; I was engaged elsewhere.

163. Because the Thunder Bay section, if I remember rightly, was gone over two or three times?—Well, I do not think this section was gone over more than twice—first, a preliminary survey, and then a location line.

By Mr. Bergin:—

164. You say it was only a preliminary survey; it seems ridiculous to let a contract on that?—I do not like it at all; it is against my views; my views are—and this is what I have been accustomed to, except in this country—that the work should be thoroughly elaborated, thorough surveys made and all the information obtainable, obtained, before the contracts are let. If that is done there will not be so much difference between the quantities executed and those estimated. I may add to what I have stated regarding the shrinkage in the muskegs, that I was specially instructed to enquire into every cause of increase in quantities, and that I found that the surveys across these muskegs had been made in the winter. Mr. Rowan also informed me that the quantities taken from the profiles were not taken under his direction, but they were taken in Ottawa. In that way the party who took the quantities out, knowing nothing of the country, and making no allowance for subsidence, would estimate the quantities too low.

165. Would not that fact be well known to the Engineer-in-Chief through whose hands these contracts must have passed; and was not it his duty to point out to the Minister of Public Works, before the contracts were let, that the estimates could not be correct, and that the expenditure must increase in proportion?—You are asking me to give an opinion; it certainly is the duty of an engineer to know all the facts relating to the work; but whether Mr. Fleming did or not, I do not know.

166. I am asking you what is the duty of an engineer?—It is the duty of a Chief Engineer to get all the necessary information, and to place it at the disposal of the Government before the contracts are let.

167. Must he not, if he had paid proper attention to the matter, have known, from the circumstances you have detailed to us, that the estimates upon which the contract was based were so much lower than the work necessary to be performed, and that a sum vastly in excess of the estimate must be paid by the Government? In

other words, was it possible for the outside public, under the estimates, to form anything like a correct idea of what the work would actually cost?—No.

168. Well, if the outside public could not, could the Minister of Public Works and the Chief Engineer—because they must have had the circumstances to guide them which have been made known to you?—If Mr. Rowan had made known to the Chief Engineer what he made known to me, the Chief Engineer would have known that there would be a vast difference.

169. If the Chief Engineer knew from Mr. Rowan what you knew from Mr. Rowan?—If Mr. Rowan, before the contracts were let, gave the Chief Engineer the same information he subsequently gave me, the Chief Engineer would have known that the quantities would be absolutely too low.

By Mr. Oliver :—

170. What is the difference of the dates as between the time the Chief Engineer ought to have known that and the time you received the information?—The Chief Engineer ought to have known that before the contract was let.

171. When was the contract let?—April 3rd, 1875.

172. When was it that you received the information from Mr. Rowan?—The information I refer to was received by me in the spring of 1878.

173. Then there is three years difference?—Yes.

174. Could not that information have been obtained by Mr. Rowan between the two periods, April 1875 and 1878?—He was aware all the time that the quantities were exceeding the estimate.

By the Chairman :—

175. Were you in a position to receive that information before that from your immediate connection with the work?—No, my attention was not directed to it.

176. Then, as a matter of fact, these estimates upon which the contracts were based, were not the result of actual and close surveys?—They were certainly based on insufficient information.

177. The estimates of quantities were made in the office here?—Mr. Rowan told me the quantities were taken out from the profile at the office in Ottawa, by some one under the direction of Mr. Fleming or Mr. Hazlewood.

178. Does that apply to other contracts as well?—I do not know; that is before the matter came into my hands.

179. Then the fact is that the gross amounts of these contracts—and particularly as regards this one—is no guide as to the cost of the work?—It has turned out so.

By Mr. Bergin :—

180. There really was no accurate survey made before the contracts were given out?—That is the conclusion I have come to; the matter has only come into my hands during the last year; I was instructed by Mr. Mackenzie to find out the cause of the increase, and the conclusion I came to after all my enquiries was that the quantities were increased by the sinking in the muskegs, and that there had not been sufficient information obtained before the contract was made.

181. These contracts not having been founded upon accurate surveys, you are not surprised at the difference between the amount expended and the amount contracted for?—I am not surprised at the difference; there are two ways in which a discrepancy might occur: the original quantities might be correct and the measurement returned for the contractors wrong, or the original quantities wrong and the quantities returned correct. I enquired into that specially and I came to the conclusion that the quantities returned as executed were more reliable than the original estimate, and that the fault was in the original.

182. Now, do you think that any prudent man, without an accurate survey and under the circumstances you have detailed to us, would have recommended the head of his Department to give out the contract?—The Chief Engineer approves of the way in which the contracts are let, under which the contractors are paid by a schedule of rates for each different piece of work; that being the case, it is not of so much importance to have the information so close before the contract is made as it

would be if it was let by a lump sum; he says the public does not suffer by the information not being had beforehand.

183. Might not the public suffer in this way: when works based upon such estimates are offered to public tender, it might happen that a tenderer would be in possession of information that would enable him to offer to do the work at a rate so much lower than the work was worth, knowing that afterwards, when he came to do the work, he would get such estimates passed from month to month as would make up a payable amount;—in other words, might it not happen that contracts given, on the face of them, to the lowest tenderer, might not have been given to the lowest tenderer?—Of course; it leads to such things as that if the rates are not consistent; that is the most important point in letting the work in this way; if the rates are consistent an increase in quantities will not injure or materially benefit the contractor, because he gets a reasonable profit on each class of work he does; but one of the difficulties in being forced to accept the apparently lowest tender is that, if the rates are inconsistent, there may be trickery, the tenderer expecting that some quantities will be reduced and some increased, so that it might turn out after all that the lowest tender had not been accepted.

By the Chairman:—

184. For instance, a man might tender for a certain class of work at a low figure, expecting that it would not have to be done?—That is the objection I have always had to the system. I differ from the Chief Engineer regarding it. Of course, every man has a right to his opinion, but I know that in all works I have been engaged on before I came to this country a great deal of care has been taken to estimate as nearly as possible the quantities of all kinds of work before letting contracts. The first I knew of this system was on the Erie Canal, where, as I heard, there was collusion between contractors and engineers who calculated the quantity of material to be put in some higher and some lower than was actually required.

By Mr. Mackenzie:—

185. When did that happen?—It was told to me many years ago; twenty-five years ago or more.

186. At the first building of the canal?—Yes; it was merely told me as an illustration of the tricks resorted to; I was not told any particular portion.

By Mr. Haggart:—

187. You have been engaged on different works in different parts of the world; did you ever know such a variation between the quantities performed and the quantities estimated as on this work?—I have seen great variations in some works, mostly in consequence of special changes made in the character of the works, but I do not remember any works where the discrepancy has been so great without any radical change being made in the position of the line.

By Mr. Mackenzie:—

188. I am afraid your answer is speculative?—It is hard to answer the question.

By Mr. Haggart:—

189. Is the same staff on the road now as when the line was located?—The staff are all dismissed now the work on section 14 is done.

190. I mean the heads of the Department?—Mr. Rowan is district engineer still.

191. The same difficulties may arise under the contracts made the other day?—There may be; but there has been better information obtained in reference to those contracts than in reference to the others.

By Mr. Mackenzie:—

192. Did you observe a variation in prices in some of the tenders; one of the accepted tenders, for instance, has \$4 per lineal foot of three feet piping and the other is \$50?—That is one instance.

193. And there is another, for cross-laying timber in soft places, \$480 an acre, and the other is \$2,480?—I believe there are wide differences.

194. In all accepted tenders?—I looked at sections A and B and I remember the items you speak of. I remember I reported there were inconsistencies in the tenders for corduroying.

By Mr. Haggart:—

195. I have looked over the profiles of the work Purcell & Ryan performed from Thunder Bay upwards; the estimated quantity of earth per mile was 15,000 yards; the actual quantity performed was 27,000 yards; now, on section B there are 119 miles, and it appears to me that there are no greater quantities on that line than on the work Purcell & Ryan performed before, and yet the estimated quantity is 42,000 yards a mile?—I superintended the quantities on that work myself, and if I had been in the field and got the data myself, I could have made close estimates, but I made liberal allowances from the best information I could get.

By Mr. Mackenzie:—

196. Do you remember that on sections A and B we decided to send out second parties after the first location survey?—Yes. Those sections appear to have been better surveyed than previous sections.

197. That was so as to have the surveys as accurate as possible?—Yes.

By Mr. Haggart:—

198. Have you the papers regarding Contract 15 with you?—Mr. Fleming's report contains the original quantities on that section.

MARCUS SMITH.

The Sub-Committee then adjourned.

WEDNESDAY, APRIL 16th, 1879.

Sub-Committee met.—Mr. PLUMB in the Chair.

MARCUS SMITH, called and further examined.

By the Chairman:—

199. Have you with you the copies of tenders for the work on Section 14?—No, I was asked to bring a statement shewing the difference between the quantities estimated and the quantities executed on the last mile of Section 14, adjoining Cross Lake. I find the change of location extends over a one and quarter miles. We cannot find the details from the original estimates, but we have taken the quantities out from the profiles, and have arrived at them pretty closely. I find in the original line, solid rock excavation 16,500 yards, and earth 176,000 yards estimated for. On the present line the estimate is, rock excavation 19,000 yards, earth 183,000 yards. The increase is not so great as I thought it would be. It is 2,500 yards of rock, and 7,000 yards of earth by the change of grade.

200. The grade was altered?—Yes, to meet that of Section 15, the adjoining contract. I have found a plan which shows the original line of Section 14, and the located line, which has been asked for during the examination, but which was not then in my possession. (Plan produced.) There is little difference between the preliminary line and the located line at the east end of Section 14, and west end of 15. The grade of 14 had to be raised to meet that of 15.

201. Under whose authority were the deviations made?—They were made of course under the authority of the Engineer-in-Chief, but the district engineer has to exercise his judgment. The preliminary survey is a trial line selected by the eye. If there is a very great deviation in location from the original line after works are let, it has to be submitted to the Department for approval, but minor deviations, changes of ordinary occurrence, are not worth bringing before the Department.

By Mr. Mackenzie:—

202. They are generally made in the interests of the road?—Yes.

By the Chairman:—

203. How does that deviation alter the quantities?—The alteration shortens the line, and was intended, of course, to lessen the work if possible.

204. What was the practical result of that variation?—The general result is an increase in quantities; but I do not know how much it varied in that particular portion.

205. You have not been able to trace out the cause of the great variation?—No more than what I have already explained. The muskegs account for a considerable portion of it. The main deviation commences, going westward, at White Mouth River, and the located line joins again at Broken Head River. It is about 23 miles; it straightens the line and shortens the distance.

206. How much?—Not very much; about half a mile on the whole length. The country appeared to me to be very similar on the two lines, but Mr. Rowan thought there might be a little more wet ground on the new line, and, in fact, the contractors say there was a great deal more wet ground. I do not think that would have appeared on going over the country, for it appeared to the eye very much the same.

207. I think the Committee understood from you that the bill of quantities had been made up here in the office?—I told you that from what I heard in the office. I was engaged at that time west of the Rocky Mountains. All the surveying parties came in to Ottawa at winter time; and in conversation with the late Mr. Hazlewood I found that some of the quantities for Mr. Rowan's work on Section 14 were being taken out in the Ottawa office, not under Mr. Rowan's direction.

208. Are you able to say who made them up?—I cannot say.

209. Mr. Rowan was district engineer; from whom did the information come on which the quantities were based?—I don't know what assistant made the surveys; they were made under the direction of Mr. Rowan, and the quantities ought to have been taken out under his superintendence.

210. Mr. Rowan had the general superintendence, but there was some one on the line, I suppose, who was the chief man for that particular work, and under whose directions the quantities are found?—The duties belonged to the division engineer, Mr. Thompson, but I don't know if he was appointed then. I am not sure whether his appointment preceded the preliminary survey or not.

211. Do you know when this bill of works was made up?—No, I do not; it would be shortly before the letting of the contract.

By Mr. Bergin :—

212. Was there only one bill of works?—Yes.

By the Chairman :—

213. And the contract was let on that bill?—Yes.

By Mr. Mackenzie :—

214. I suppose Mr. Brunel and Mr. Thompson were both on Section 14 all the time?—I don't know, I can ascertain that from Mr. Rowan by telegraph.

By the Chairman :—

215. Will it be possible for you to ascertain who prepared the bill of works?—I will endeavor to find out.

216. Can you ascertain approximately what difference the change of line made in the quantities. Of course, the estimate was made on the line as it was run, which was not adopted in the construction?—It would be difficult to do that unless we had the person here who took out the quantities, and could find out the manner on which he took them out, whether he made any allowance for subsidence or shrinkage.

217. How, as regards the prices on this contract. I see the first item is "clearing 1000 acres at \$5." Is that price high or low?—Surely that must be a mistake. It is a very low price, though the trees are small and scrubby.

218. That you consider very low?—It is a low price for any kind of clearing.

219. Then there is, "close cutting, 100 acres, at \$40." How is that price?—That is more reasonable; it is just high enough; it is a good price.

By Mr. Bergin :—

220. Is it consistent with the other?—The other seems to be far too low.

By the Chairman:

221. For close cutting, what price would you consider to be fair?—It would not do for me to fix a price.

222. But how is it in comparison with the other tenders?—In comparison with other tenders, the price is rather high.

By Mr. Mackenzie:—

223. It would depend on the character of the timber?—Exactly so. At that point it is small timber; \$40 is not a high price for close cutting, but with that timber the price is rather high.

By the Chairman:—

224. "Grubbing, including side ditches, \$60 an acre"?—Considering the timber is small, I think that might be a fair price. Grubbing prices generally run much higher than that, but the timber being small, I think it is a fair price.

225. "Fencing, \$6 per 100 lineal feet"?—That is a fair price.

226. "Solid rock excavation, \$2 a cubic yard"?—That is a fair price, I think. Some rock excavation has been let lately for less, but there is difficulty in getting access to this rock. I do not think it is an out-of-the-way price; it is a fair price, I think.

227. "Loose rock excavation, \$1 per cubic yard"?—That is consistent.

228. "Earth excavation, including borrowing, 26 cents per cubic yard"?—That is a fair price. The last three prices you have mentioned are very consistent prices.

229. "Excavation in off-take drains beyond railway limits, 23 cents a cubic yard"?—That is below the price for the line cutting. It was separated from it because it was expected there would be some difficulty with the material, which was expected to be found. It is called gumbo, and is a hard, concrete material.

By Mr. Mackenzie:—

230. The off-take price is generally higher than the line price?—It is worth about the same, but when it is expected that hard material will be found, it is rather higher. In this case it happens to be lower as no hard material was met with.

By the Chairman:—

231. "Under drains, \$50 per 100 lineal feet." How is that?—It requires some consideration to answer that. It depends on whether there is much stone at hand. It is a good price if suitable stone is near.

232. But it is not only excavation; it is making the drains?—Yes. There are poles and stone required in that work. It involves excavating the drains, putting in poles and stones and filling the drains up again.

233. "Bridges, 100 feet clear span, \$4,000 each." How is that price?—It is about the average price.

234. "Crib-work in abutments and piers, including timber and stone fillings, \$3 per cubic yard"?—That is a fair price.

235. Rip-rap \$4 a cubic yard?—That is a good price.

236. Piles driven, 50c. a lineal foot?—That is a good price for piles; it is rather high; but it depends altogether upon where the piles can be got.

237. Then there is a lot of square timber estimated for 6,000 lineal feet, 16 x 12, at 60c.?—We had some correspondence with the contractors about that large square timber; they could not get it in the neighborhood, so they had to import it from Minnesota.

238. The other timber is 55,000, 12 x 12, at 40c.; 1,000, 12 x 6, at 25c.; 2,000, 9 x 6, at 25c.; 24,000 flatted timber, 8-inch, at 20c.; 10,000 hemlock or spruce bark, at \$50 a thousand; 8,000 pine, at \$50 a thousand; 5,000 hardwood plank at \$50; there seems to have been very much less of these different kinds of wood furnished than was estimated?—I suppose the estimates were made very liberal, and it was subsequently found they did not want so much.

239. Are the prices low?—It is difficult to say; it depends upon where the timber is to be got from. As I understand it, the price of the timber is not high because it is difficult to get at.

By Mr. Mackenzie :—

240. It had to come down the Red River from Minnesota?—Yes, the larger sizes from near the head waters of the Mississippi.

By the Chairman :—

241. You have already told us that you had no means of ascertaining how the great differences took place between the contract as given out and the result?—No further than what I have explained. I said that when questioning the Engineer-in-Charge he showed me his books, from which I learned that it took, in some places, double the quantity to make an embankment than could be estimated from the profiles because of the swampy nature of the ground.

242. It seems that under the head of clearing, 1,000 acres were estimated for, but only 214 acres were cleared; that is a considerable difference. How do you account for it?—I cannot account for it.

By Mr. Mackenzie :—

243. Perhaps that would be accounted for by the Telegraph Company having cleared in that locality?—I do not know if the telegraph line on that section was let first.

244. It was?—If the telegraph contract was let first, then the clearing would be done under that contract; it was so on other sections.

By the Chairman :—

245. Grubbing, including side ditches, seems to have been increased from 200 to 337 acres?—That might take place; it is difficult to estimate it beforehand.

246. The solid rock excavation was increased from 10,000 cubic yards to 34,442, with 5,706 yet to be executed?—I have accounted for 2,500 of that increase by the change on the last mile; I do not know what is the cause of the other.

247. Is it possible for you to ascertain?—I might ascertain by going over the line.

248. Does it not strike you as being a great change?—Yes.

By Mr. Caron :—

249. Would not the local engineer be able to account for it?—Mr. Thompson might.

By Mr. Mackenzie :—

250. Was rock covered over in places where there appeared to be an earth embankment?—In some places; this would account for some of the increase; I mentioned that before; some of the rock might have been covered over with a thin layer of earth, but there was not much of that because there was very little line cutting, most of the line being above the ground and made from side ditches.

By Mr. Bergin :—

251. Is it not usual to sink test pits?—As almost all the line is above the surface such would not be required. If you look through the profile you will find that there is very little cutting—hardly any. Some of the increase no doubt can be accounted for from the rock not having been seen on the surface.

By the Chairman :—

252. From your knowledge of railway building do you think such a small deviation as you find on the profile would account for the enormous increase in quantities?—It does not account for the quantity of rock.

By Mr. Mackenzie :—

253. Where do you get rock used for the filling at Cross Lake?—That is coming out of the cutting adjoining.

254. Out of the ordinary cuttings, or did you excavate for it?—Out of the ordinary cuttings. I do not know but that before they complete the line they will have to borrow some rock, but on this section they would not require to do so, because it comes from the cutting.

By the Chairman :—

255. You could find out what rock would be required at Cross Lake?—Yes, the embankment has to be protected on one side. When I was there last summer they were working at the protection works from the rock cutting.

256. But not without borrowing?—It was not brought to my knowledge that they would have to borrow, and I presumed that out of the cutting they would have a sufficient quantity.

By Mr. Bergin:—

257. There were 3,000 yards of loose rock estimated for, and the actual quantity paid for was 36,720 yards at a dollar a yard; in other words there were 33,720 yards extra; do you understand that difference?—It is difficult to explain the great differences in the quantities; of course in cuttings it is very difficult to estimate the loose rock. If test pits are sunk one may come across some boulders which will lead to getting the approximate quantities; but there was so little cutting on this section that I cannot account for all the increase. Most of the grade of the line is above the surface of the ground.

257 a. Do you know anything of the character of the loose rock; are there many boulders?—Yes.

258. Would \$1 be a high price for boulders?—The price on other contracts has ranged from ninety cents to over \$1 for boulders—\$1 is a good price.

259. I should think fifty cents would be a good price?—It takes a good deal of time to separate boulders.

By the Chairman:

260. The earth excavations estimated, were a million yards; they have increased by 554,431, and there are still 109,234 to be done. There is a total increase of 663,665 yards on the original estimate?—Does that include earth excavations for line and off-take ditches?

261. No; there is an increase of 663,665 yards; is not that a startling difference?—It is a large difference.

262. As far as your experience goes, do you know of such an increase having occurred on any other contract?—If the original quantities had been estimated by the engineer who made the surveys, and he had used proper judgment, there would have been no such difference as that.

263. Now, there are 109,234 yards to be done, at 40 cents a yard, and there are 25,766 yards, at 40 cents a yard done, which do not appear on the original estimate; how do you account for that?—That was on the last mile of the work; it was very heavy embankment, and the material had to be brought several miles, as there was no earth to be borrowed near at hand.

264. That was on Whitehead's Contract?—It was Sifton & Ward's Contract, but as Whitehead had all the plant there—locomotives, steam-shovels, cars, &c.—he proposed to take that work out of Sifton & Ward's hands, and to complete it at 40 cents a yard. Now, this, 40 cents is actually a less price than Sifton & Ward had, because they were paid for haulage. In Sifton & Ward's Contract you will find that they were to be paid one cent a cubic yard for every hundred feet of haul over 1,200; and that would have come to more than 40 cents for that long distance. We made a special arrangement with Mr. Whitehead to complete that work at the fixed price of 40 cents.

265. Was that a fair price?—It was an economical price under the circumstances.

266. Was it a fair price in itself?—Yes; it was a lower price than Sifton & Ward's, as they had some six miles to haul the same material. There was a report made on that matter which shows the reason why this was done, and that it was economical to do so.

267. The price under Sifton & Ward's Contract would have been higher, and the difference would have been greater if it had not been for this arrangement with Whitehead?—Yes; the haulage would have made the price higher.

268. Could you tell what the price would have been?—It depends upon the exact distance they had to haul; it would vary according to the distance.

269. In the excavation of off-take drains 40,000 yards were estimated at 23 cents a yard; 87,163 yards were paid for. Is that a matter where accuracy can be obtained?—No; that is a matter that would be more uncertain. These drains, to

my knowledge, were extended considerably; it was found necessary to extend and deepen them, in order thoroughly to drain the marshes over which the line went.

By Mr. Mackenzie :—

270. What was the longest distance you had to make those drains?—I do not recollect the exact distance; but it was over a mile or a mile and a half.

271. It was reported to be over two miles?—Yes; the longest drain in that neighborhood might have been two miles.

By Mr. Bergin :—

272. "Earth excavations under water," none estimated for but 3,378 yards charged at 78 cents a yard; how do you account for that?—That work was in foundations. You will find that there is a clause in the specification which fixes the rate for excavations under water for foundations at three times the price of ordinary excavations.

273. I see 26 cents is the price for ordinary excavation, so that 78 cents would be the actual price?—Yes; it is provided for in the specifications.

274. There are 20,000 feet of under-drains at \$30 estimated; and there were none executed; can you explain this?—I can only suppose what may have been the cause of this: the necessity for these drains is generally found out during the construction of the line; springy ground may be found which would make embankments insecure without drains to save them. It is very difficult to tell beforehand, approximately, how much of these drains may be required; so I suppose that quantity was put in to get a price in case any such drains should be required.

By the Chairman :—

275. Do you consider \$3 a cubic yard for crib-work a fair price?—Yes.

276. There is a large increase in piles—2,400 lineal feet being estimated and 25,173 performed?—Yes.

By Mr. Mackenzie :—

277. Would it not be difficult to estimate the whole number of the piles required?—Of course one cannot make a very close estimate; but this is an excessively large variation.

By Mr. Bergin :—

278. If some of these under-drains were done away with you could account for the extra quantity of piles?—The piles are substituted for trestle-work; there ought to be a decrease in the trestle-work if there has been an increase in piles.

By the Chairman :—

279. There is a decrease in the 16 x 12 inch timber; there is also a decrease of 26,000 feet in the 12 x 12 inch timber; that timber is very difficult to obtain there, is it not?—It has to be brought some considerable distance. There is no pine timber there; the 12 x 12 inch timber used for piles is tamarac. To my knowledge, in general culverts piles have been substituted for bents or trestle-work; that would account for an increase in the piles.

280. There is also a decrease of about 36,000 in the 12x6 timber; in all that was furnished there was an increase in the 9x6 timber, and there were supplied quantities of 12x9, 9x8 and 6x6 timber, which were not estimated for; that would perhaps go towards making up the decrease in the larger timber?—These 9x6 timbers were used for braces on the piles.

By Mr. Bergin :—

281. Could that small timber be obtained readily in the neighborhood of the work?—Yes, anything under 12x12.

282. It would cost the contractor less in proportion then, than the large timber.
—Yes.

By the Chairman :—

283. Of flatted timber 24,000 feet were estimated, and 9,267 furnished; could that have been got in that neighborhood?—Yes.

284. The original estimate of this work was \$402,950; the total amount paid up to the present is \$658,849.80; work yet to be done is estimated at \$63,285.60, which makes a total of \$722,135.40, or a difference of \$319,185; that is about 80 per cent.;

in your experience of railway building is it a common thing to see such a variation between the estimate and the result?—It sometimes occurs; but if the work had been as carefully surveyed and estimated as it ought to have been, there would not have been so much difference as there was. I have known cases in which great increases have occurred; there was the Great Western, one of the first railways built here on which there was an enormous difference.

By Mr. Oliver:—

285. Do you know whether Sifton and Ward made well out of these contracts of theirs?—I don't know about that, except what they told me, and they told me quite the contrary; they were complaining of having hard work to make both ends meet.

By the Chairman:—

286. We have now contract No. 15, from Cross Lake to Keewatin, track laying and ballasting, Sutton, Thompson & Whitehead's contract; this work is well in progress?—Yes.

287. I see there are in this section 300,000 yards of solid rock excavation at \$2.75 a yard; that is a high price is it not?—It is considered a high price.

By Mr. Bergin:—

288. Section 14 was \$2, was it not?—Yes.

By the Chairman:—

289. There were 300,000 yards estimated; the quantity executed was 342,376 yards, and there are still 183,270 yards to be done; that makes 525,646 yards altogether, or an increase of 225,646 yards; have you any means of ascertaining what caused that increase?—That was accounted for by the change in the manner of completing the line across valleys and ravines. There is a large amount of trestle-work in the original estimate for making up the gaps; but that was changed to rock and earth. Of these ravines a large number are filled with water, and rock is required for the protection of the embankments.

290. Was that change made under the sanction of the head office or under the chief engineer?—All I know about it is contained in the papers I produce. When I went out to inspect the works last August or September I went over the whole section, and the resident engineer, Mr. Carre, was making up the embankments of solid earth and rock.

291. Who is Mr. Carre?—He is the resident engineer under Mr. Rowan, who is the district engineer over that contract as well as others.

292. The work was done then under Mr. Carre's direction?—He superintends the work. I understood the change was sanctioned by Mr. Fleming. When I arrived at Winnipeg I asked Mr. Rowan, the district engineer, for the order for this change, and he said he had instructions from Mr. Fleming. Here is a letter from Mr. Fleming to the Department on the subject for a copy of which I telegraphed to Ottawa. (*For this letter see page 31.*)

293. Then you say the change was made through Mr. Rowan, by Mr. Carre, under the direction of Mr. Fleming?—Yes; here is the letter; there is also a letter of Mr. Whitehead's dated 6th November, 1877, proposing the change. Mr. Rowan submits that letter with an estimate of how the change would affect the quantities and cost to Mr. Fleming; and Mr. Fleming writes a letter to the Department of Public Works, dated 22nd May, 1878, recommending the changes.

294. There are 30,000 feet of loose rock excavation in the original estimate put down at \$1.75 a yard; is that a fair or a high price?—It is a high price.

By Mr. Bergin:—

295. It is ninety cents on some contracts?—Yes.

By the Chairman:—

296. There are 46,711 yards executed now, and it is estimated that there will be 13,259 more; the quantity in this case is doubled exactly?—Yes.

297. That arises out of the change of line I suppose?—To a considerable extent I suppose it does.

298. There are 80,000 yards of earth excavation, including borrowing at 37 cents a yard; is that high or low?—That is a high price.

By Mr. Mackenzie :—

299. That depends upon the haul, does it not?—Yes; the price would be regulated by the haul, but he has an allowance for haul besides.

By the Chairman :—

300. There were 80,000 yards estimated; 224,306 yards have been done, and there are yet 1,433,114 to be done, making a total earth excavation of 1,677,420; \$29,600 was the sum set down for this work in the original estimate; \$82,943 has been paid, and there is yet \$580,252 to be paid. How do you account for the increase?—That is accounted for by the enormous increase in quantities in making embankments of earth instead of trestle-work.

301. Would the trestle-work have cost so much as that?—No; a large part of that increase was caused by the making of embankments instead of trestle-work; but there was also an increase caused by the readjustment of the grade lines when the change was decided upon. The same grade lines that would have done for trestle-work would not be suitable for the embankment. They had to be lower.

302. Under these circumstances, the aggregate of the work being lowered in one way and increased in another, would leave the amount somewhere near the same as the original estimate. Lowering the grade would decrease the earth.

By Mr. Mackenzie :—

303. It would decrease the filling but increase the excavation?—Yes.

By the Chairman :—

304. There were, "under drains, 10,000 lineal feet, at \$55 a hundred." Is \$55 a high price for that? What was the price for that work under the other contract?—\$50; the price would vary.

305. "Howe Truss-bridge, 40 feet clear span, \$600"?—That is the only one, I think. In execution I do not know whether that bridge has not been done away with. Such was my suggestion when I was there last year.

306. "Line tunnels, 425 lineal feet, at \$30." 332 feet executed; 44 feet remain to be done. How is the price of that?—The price of that is absurdly low. There are 15 cubic yards in the foot round. That gives \$2 a cubic yard for the excavation in the tunnel. The excavation in open cutting is \$2.75. The prices given in the the tenders we have received are generally four or five times as much for tunnel excavation as for open cuttings.

By Mr. Mackenzie :—

307. I think the tunnel on Section 25 was \$8 a cubic yard?—Yes, that is fully four times the price of open cutting.

By the Chairman :—

308. There are, "stream tunnels, 20 by 12, 200 feet, at \$26." How is that price?—There are 12 cubic yards per lineal foot. That is a low price. It gives very little more than \$2 per cubic yard.

309. The 12 x 4 stream tunnels are estimated at \$14 a lineal foot?—That gives \$3.50 a yard. The price is improving.

310. The 6 x 1 stream tunnels are \$7 a lineal foot?—That is \$7 a cubic yard. These prices are very inconsistent. The man cannot have understood his work.

311. Of rip-rap there is just the amount executed which was estimated for, at \$2 a cubic yard?—That is a low price.

312. "Bridge masonry, 2,400 yards at \$11"?—That is a low price for that part of the country.

313. "Crib-work, 380 cubic yards, at \$2.75"?—That is rather low; we have had tenders run up from that to \$4.

314. We have a very heavy bill for timber. This seems not to have been executed. Do you know how these prices are, 16 x 12 at 33c. a foot?—The same sized timber in other contracts was 60c.

315. "Hemlock or spruce planks, \$12 a thousand, board measure." Is that right?—Yes, that is the price.

316. "Wrought-iron bolts and spikes, at 13c. a pound." Is that right?—Yes.

317. "Cast-iron bolts and spikes, at 10c. a pound." Is that right?—Yes.

318. "Ties, 270,000, at 40c." ?—That is the price.

319. We were questioning Mr. Nixon, last year, about the price of ties on a contract near there?—That was on the Pembina branch.

320. Would they be lower there? Quigley offered them at 26c.?—They would be a little lower on Section 15 than on the Pembina Branch. A good many of them came from Section 14 to the Pembina Branch.

321. Do you consider 40c. high for ties?—It is a good price; rather high, even for that neighborhood.

By Mr. Mackenzie :—

322. They had to be delivered over Section 14?—Yes. That contract embraced from the Red River, and part of them had to be carried a good distance.

By the Chairman :—

323. "Track-laying, \$290 a mile" ?—That is a fair price.

324. "Ballasting, 33c. per cubic yard" ?—That is a fair price. It is lower than earth excavation, which is 37c. It is a fair price, I think, for ballasting.

By Mr. Mackenzie :—

325. How much does it come to a mile?—It depends on the quantity they put on.

By the Chairman :—

326. There were 112 miles in all, costing \$87,655; that is about \$800 per mile. Is that an average price?—It depends on the whole quantity of ballasting.

By Mr. Mackenzie :—

327. Is there not a certain number of inches laid?—In some contracts the road is half ballasted; that is up to one girth of the rails, some 8 inches. But the culverts and bridges are put up to the proper height, and an extra quantity is used to raise the track up to the bridges which increases the quantity very considerably.

By the Chairman :—

328. The total estimate of the work under the original contract is \$1,594,035. The result of the work done and to be done seems to be \$2,525,000. There is a large quantity of work estimated here that may, I suppose, be increased or decreased; you can not tell me what that increase or decrease will be?—No, I can not tell very well what that would be.

329. That is an increase over the estimated cost of more than 60 per cent.?—That is from the change in the character of the work. I observe that for the round timber trestle-work the prices are very low, and there is a very large quantity of it.

330. Do you consider this particular section, as it is done, is a first class work, a first class road?—The embankments will make it a first class road.

331. Is the general character of the work that of a first class road?—Yes, when the embankments are made. Embankments have been substituted for trestle-work and it has thus been made a first class road.

332. This amount includes all the work on the road, except the superstructure, iron, rails, castings, &c.?—Yes; there is a bridge which is not included there; it is an iron bridge over the Winnipeg, and is not let in the contract.

333. It has to be added to the cost of the road?—Yes.

334. How much is that?—It is about 200 feet span, and will probably be from \$15,000 or \$20,000.

By Mr. Mackenzie :—

335. Not necessarily added to this, you might as well add it to the other contract?—Yes; there are two bridges over the Winnipeg, one in this contract and the other in the contract let recently. Of course, to complete the line so as trains could run over it, that bridge would have to be included; but it is not included in Whitehead's contract.

MARCUS SMITH.

The Sub Committee then adjourned.

TUESDAY, April 22nd, 1879.

Sub-Committee met.—Mr. PLUMB in the Chair.

MARCUS SMITH called and further examined.

By the Chairman :—

336. Mr. Smith, I would like to ask you a question or two in regard to Section 15?—Before that is done there is a telegram here which it would be as well for me to read; it is from Mr. Rowan: "Trial line (Section 14), without curves, by Carre, winter '74-5, from which approximate plan and profile of proposed location was made and tracing forwarded by me to Ottawa, end of January, '75; actual location commenced June, '75; being engaged here on other business I cannot say who made calculation at Ottawa; clearing in schedule was approximate quantity if not done by telegraph contractor; quantity in final estimate. work done on station grounds and off-take drains outside telegraph limit." You will observe that there were 1,000 acres of clearing to be done; that was done by the Telegraph Company; the 214 acres were in the station grounds and off-take ditches, and were not done by the Telegraph Company.

337. I understand that there were three bills of works for Contract No. 15, before the contract was finally awarded; is that so?—Yes; the first bill of works on which tenders were called was in 1875; I have not the exact date, it was for a permanent solid railway with embankments; the quantities estimated are 600,000 cubic yards of solid rock; 40,000 cubic yards of loose rock; 900,000 yards of earth in the line cuttings.

338. Then as to timber?—There is very little timber; the largest quantities are 22,000 of 12-inch square timber and 15,000 feet of hemlock.

339. You do not know the amount of that timber?—No; and I do not see it here.

340. The second bill of works was some time in August?—I have a copy of the second bill of works; the road was to be completed in July, 1878; it is a very meagre bill of works, it is not to complete the line, only to take out the excavations, and we have the filling up of the gaps between, for a subsequent tender. The rock was 300,000 cubic yards; the loose rock 30,000 yards; the earth excavation, 80,000 yards; off-take ditches 20,000; there is no timber at all there.

341. Do you know anything about the amount for that?—No.

342. Can you tell us why these tenders were declined?—No, I cannot; I had nothing to do with that.

343. What was the third bill of works?—The third bill of works has solid rock 300,000 cubic yards, loose rock 30,000, earth excavation 80,000; it is very much the same as the second bill of works; in fact it is the same with the timber added to complete the gaps.

By Mr. Bergin :—

344. Is there a large quantity of timber?—A large quantity.

By Mr. Haggart :—

345. In the course of construction has the plan adopted in the third tender been followed?—It was being followed up till some time in the spring of last year.

346. What plan is being followed now?—A large quantity of round timber in trestle-work has been abandoned, and embankments of earth and rock are being made instead.

347. And virtually the first bill of works is being carried out instead of the last?—It seems to be pretty near the form of the first bill that is being adopted now.

By the Chairman :—

348. When did that change take place?—Last summer, I believe. I remember it was stated before the Public Accounts Committee, last year, that there had been no change then; so the change has been subsequent to that.

By Mr. Haggart :—

349. You stated before the Public Accounts Committee, last year, that the only changes made in the character of the road were those made in ordinary construc-

tion—(Mr. Fleming, Mr. Mackenzie and Mr. Rowan, if I remember right, also said that);—and that the changes that were being made would not increase the cost to the public?—There were very few changes made up to that time.

By the Chairman:—

350. Do you know the circumstances under which these changes were made; by whom they were recommended or suggested?—There are three documents here referring to the change in the character of the work on Section 15; they came into my hands when I went over the works last summer, and when, finding that the character of the work was being changed, I asked for the authority. When I asked for the authority, I was referred to a letter of Mr. Fleming, which I asked Mr. Rowan to telegraph for, and which was sent to me at Winnipeg.

By Mr. Mackenzie:—

351. Have you a copy of the telegram you sent?—I will try and find it. The first letter of these three is one from the contractor, dated November 6th, 1877, and suggesting certain changes. (*See Mr. Whitehead's letter page 30.*)

By Mr. Haggart:—

352. What is the answer to that?—There is no answer to that; but Mr. Rowan, acting on the suggestion of Mr. Whitehead, makes out an estimate of the cost of the changes.

353. Does he recommend the changes?—He submits them to Mr. Fleming. (*See Mr. Rowan's letter page 32.*)

354. It has cost a million more has it not?—That would not be due altogether to that change; there were changes made in the grades which altered the circumstances.

By Mr. Mackenzie:—

355. There was a changed elevation to avoid solid rock cutting was there not?—On the first profile on which the tenders were received the grade line was drawn higher so as to avoid the rock cutting as much as possible; then it was found that the embankment would be very large, and the grade line was lowered to balance the cutting and the filling more nearly; it was calculated that it would be more economical to cut the rock a little.

By Mr. Haggart:—

356. What was the practical result of that; an increase or a decrease in quantities?—I do not know which quantities you wish to compare.

357. When the line was lowered how did the price of excavation and filling correspond with the less excavation and greater filling of the former line?—Of course the change in the character of the work greatly increased both the earth and the rock, but the increase would have been greater still than it is had it not been for the change in elevation.

By the Chairman:—

358. You say the lowering of the grade increased the cutting in the rock and decreased the filling; what effect had that on the value as compared with the original line; did it increase or decrease the cost?—It would reduce the cost and balance the cutting and filling more.

By Mr. Haggart:—

359. To what extent would it increase the rock?—To a small extent, but it would reduce the earth to a large extent.

360. You do not know the actual figures?—No.

361. Surely you have a report from the engineer as to what would be the effect on the general character of the road?—I do not know that there is any report on that; these practical alterations are done in the office; and we do not always make reports on them.

362. But there would be a report to the head of the Department; there would be a minute of the change?—This was a minor change; only the adjustment of the grade to meet the changed circumstances, and no report was required on it.

By the Chairman:—

363. Have you ascertained by whom these changes were authorized to this days evidence?—I was going on to read Mr. Fleming's letter. (*See Mr. Fleming's letter page 31.*)

364. Now when the original contract for No. 15 was given it was based upon certain quantities of rock and earth at high prices?—I consider the prices high.

365. There were certain quantities of rock and earth at high prices; and certain quantities of timber at low prices. The aggregate of this contract, based upon this form of tender, brought this contract lower than any other contract, except the one of Moore & Charlton, which was not accepted?—I believe so.

366. Suppose the tender of Sutton & Thompson had been based upon a bill of works involving the change of plan which has occurred, would his tender not have been higher than the others?—I would have to compare it with the tenders before. I could say that.

367. In the first tender the earthwork was 80,000 yards; the rock cutting, 300,000 yards; the loose rock, 30,000 yards; while large quantities of timber were to be used in trestle work. The change of plan would substitute earth and rock work for timber-work and essentially change the character of the work. Now, would it not have been, according to your judgment, in the public interest, and in view of that change, either to have re-let the work or to have modified the prices upon which the contract was based?—You could not modify the prices without the consent of the contractor.

368. Mr. Fleming's letter, which you have just read, recommends the change?—Yes.

369. To whom was that recommendation made?—To the Department of Public Works.

370. What action was taken by the Department upon it?—I do not know that any action was taken. When I found that they were acting on Mr. Fleming's letter I assumed that the thing had been discussed, and I did not question but that Mr. Fleming's suggestion had been approved.

371. Is there not a way of ascertaining how the Department acted?—The Deputy Minister could tell that.

By Mr. Haggart:—

372. Can you explain how it is that the letter of Mr. Whitehead's is dated 6th November, 1877, and the Engineer reports on the change on 22nd May, 1878? Why was the answer delayed from November till May?—Mr. Rowan had to refer the matter to the resident Engineer to be reported upon, which would take some weeks; and it would take the Engineer sometime to get the information about the quantities.

By Mr. Mackenzie:—

373. Mr. Rowan was here?—Yes; he was here. I suppose he had to refer to the resident Engineer, and it took some weeks or months to get the information.

By Mr. Haggart:—

374. Were you aware of Mr. Whitehead's proposal when you were before the Public Accounts Committee last year?—I had not heard of it. I understood then that there were one or two small changes, which I authorized myself but I was not aware of any general proposal.

375. Do you remember when you were before the Public Accounts Committee last year?—I think it was in April or May; such a proposal may have been talked of about that time, but it never came before me officially.

By Mr. Bergin:—

376. When did you first see these letters?—In September last, I think.

By the Chairman:—

377. The result of this change was favorable to the contractor, was it not?—Yes, it was. I have no hesitation in saying that, because it increased the quantities upon which there were high prices.

378. Could you give an idea of the advantage the contractor would gain by finishing the work this way?—I could not do that.

379. On Contract No. 13, I see the solid rock excavation is tendered for at \$1.25; loose rock at 50 cents, and earth excavation at 23 cents. Do you know any reason why that work should have been more expensive on Sutton, Thompson & Whitehead's contract, than on Contract No. 13?—Contract 13 is more accessible.

380. Were the difficulties in Sutton, Thompson & Whitehead's section?—There would be more difficulty in getting in supplies to the latter.

381. On the contract from Sunshine Creek to English River, I see the rock is \$1.50; the loose rock, 90 cents; the earth, including borrowing, 33 cents. Do you consider that there should be such a difference between that and the contract we have under consideration?—That is more accessible than Whitehead's contract.

382. Do you consider 33 cents a high price for earth excavation on that section?—33 cents is a high price on that section.

383. On No. 14, from Red River to Cross Lake, solid rock is \$2; loose rock, \$1; and earth excavations, 26 cents?—Yes.

384. There is a large increase in the earth excavation here; do you consider 26 cents a good price?—It is not an out-of-the-way price; it is a fair price, I think.

385. Compared with these contracts, the price of these three items on Section 15 are very largely out of proportion to them?—Yes; I may state that 13 and 14 appear to be very consistent; but the prices of 15 and 25 are not so consistent.

386. In what you call an inconsistent contract; if there are large variations of quantities, you cannot tell where you are as to the probable cost; can you?—No.

387. Is that the general system which has been followed?—It is the general system on this continent, but it is not the English system; the English system is more like the manner in which the Intercolonial was built.

388. If contracts are to be awarded to the lowest bidder, ought there not to be a close estimate of quantities?—On such contracts there should be a very close estimate.

389. When the contract is inconsistent, where prices are low for some things and high for others, the bill of works ought to be made as carefully as possible, or else you do not know where you are?—Certainly; in the lump sum contract, the prices the contractor puts in may be as inconsistent as he likes, because it does not increase or diminish the final cost of the work; but in the schedule of prices system, it makes a great deal of difference, because the total price may be increased or decreased greatly.

By Mr. Mackenzie :—

390. An inconsistency you know is not always on the dear side; the inconsistency is in having the prices high as well as low, and low as well as high?—Exactly; that is one thing in Contract 15; the advantage the contractor may get by the change in the works is neutralized to some extent by the absurdly low prices in some of the works he has to do; the price for water tunnels is low and the quantities cannot be reduced very much; they may be reduced something, but not much.

By Mr. Haggart :—

391. In Purcell & Ryan's contract I see the clearing is increased from 100 to 381 acres?—That will occur in this way: the clearing was let to be done by the contractor for the telegraph line; but the telegraph line was erected on the first survey that was made; in the location of the line for construction, there were some deviations made from the old line, and that involved new clearing on the railway line.

392. But the telegraph line is built along the line of the road?—Not exactly; it is built on the original line, but there have been some deviations from it.

393. There is also solid rock 240,000 yards and only 76,000 done?—I cannot explain that very large difference; there was a change in the location for about two miles and a tunnel to be excavated.

By Mr. Mackenzie :—

394. You saved those two miles in length?—About two miles.

By Mr. Haggart :—

395. There is earth excavation 1,000,000 yards and 1,970,000 done?—I cannot account for that.

396. There is an increase in loose rock of from 10,000 yards to 110,000, or eleven times the quantity?—Mr. McLennan, the engineer in charge, was requested to explain the cause of the increase; this is his explanation:—(See Mr. McLennan's letter page 33.)

MARCUS SMITH.

Honorable A. MACKENZIE called and examined:—

By Mr. Bergin:—

397. What action was taken on Mr. Fleming's letter in 1878?—Mr. Fleming, the Deputy Minister, and myself had frequent consultations about it, and we had, of course, to consider various matters in connection with it. We had to consider, in the first place, the recommendation and the ground of the recommendation by Mr. Rowan. I have no doubt myself that, as far as the engineering part of the work is concerned, Mr. Rowan and Mr. Fleming were right. There can be no question of the advisability, other things being equal, of having a solid embankment instead of trestle-work. The danger of fire in that country was very great, and the certainty that the trestle-work would not last more than ten or twelve years, according to the engineer's opinion, was another element to be considered. Personally, I felt entirely with Mr. Fleming in recommending this change as a mere engineering precaution, that would take \$258,000. But then we had to consider, as a Government, the financial aspect of the matter. Our purpose originally, as I have often explained to Parliament, was to get into the prairie country as speedily as possible; to construct the road with what might be called temporary structures (that is, the bridges and viaducts, where required), so that they could be renewed with better material when we got the road built into the prairie country. After mature consideration I came to the conclusion that it would be better not to make the changes, and on the 12th of June I sent the subject to Council, not recommending that the work be done, but simply sending a report with the documents for consideration. The matter was considered at several meetings by the Council, and it was finally determined not to act on Mr. Fleming's recommendation. I never heard more of the matter until I learned from the statement of Mr. Smith before the Senate Committee, that the work had been proceeded with upon the assumption that the Government approved of the change.

By Mr. Haggart:—

398. You never authorized the change?—No; and I was never aware that it was being carried out.

By the Chairman:—

399. The Government never authorized it?—The Government never authorized it.

By Mr. Bergin:—

400. It was done on Mr. Fleming's responsibility?—There is a singular fact about that responsibility. Mr. Fleming wrote the letter recommending the change on the 22nd May, and he left for England next day. Mr. Smith then became Chief Engineer. It was my custom invariably, before Mr. Smith went out on the field, to have long consultations with him on everything that was likely to turn up; and, when he left last summer, at the latter part of July or beginning of August, we, of course, discussed exhaustively the various matters to be attended to; but I do not recollect of anything taking place about this particular matter in my communications with Mr. Smith.

By the Chairman:—

401. Was there any evidence from the estimates of work done and to be paid for, that came in every month, that this increase was taking place in the quantities?—The Minister never sees the estimates, as a rule.

402. On whose authority are they paid; there must be some supervision?—The way estimates are treated is this:—There is an estimate made every month of the entire work done. For instance, a certificate will say "total contract \$590,000;

formerly paid \$380,000; amount due, \$210,000." That is the shape of a certificate, it gives the whole amount every month of the several kinds of materials or work, deducting what has been already paid.

403. There are such enormous increases in certain kinds of work that attention should have been called to them?—I was just going to say that we determined that we would not proceed with this change. I had determined that myself. Of course you are aware that after the month of June I was here very little. I had urgent affairs pressing upon me in other parts of the country, for which the public will make allowance, and I was aware of nothing whatever abnormal about the estimates, nor was my attention called to them. It is the duty of the Deputy Minister to supervise the estimates after the engineer has examined them; and the engineer takes the estimates from the district officer and goes over them very carefully. For instance, Mr. Page, with canal works estimates, must take a fortnight or three weeks after the estimates come in before he is absolutely certain that they are correct. My attention was never called to anything abnormal about the estimates and I, therefore, did not know that they were so large.

By Mr. Bergin:—

404. Mr. Fleming went to England immediately after he wrote this letter?—I think he went the next day.

405. And on 12th June the Order in Council was passed disapproving of this change?—No, no; no Order in Council was passed; I sent a report to Council with the documents for consideration, but no action was taken.

406. Was it not the duty of somebody, when Mr. Smith took the place of Mr. Fleming, as acting chief engineer, to advise him that the change recommended by Mr. Fleming had been disallowed?—It was not.

407. How was he to know it?—He did not require to know it. If we had made any change he would necessarily be informed and instructed.

408. There was an order made by his predecessor?—There was no order that I know of.

409. Mr. Fleming's letter?—Mr. Fleming's letter does not make an order, it simply recommends a change.

410. Then how was the change made?—That is for you to find out; I cannot tell.

411. You were head of the Department?—I was.

412. Was it not your duty to see that the change proposed to you was not carried out?—It was not my duty; I could not anticipate any change without authority.

413. What is the use of being the head of the Department then?—It was not my duty to communicate to every one in the Public Works Department what we had been considering; and it was not my duty to communicate to any officer a negative decision. It was my duty, if we made any change, to communicate the change which would be done in the regular way, but we made no change and we had nothing to communicate.

By the Chairman:—

414. But after the application had been made by the contractor and recommended by Mr. Rowan and Mr. Fleming, would it not have been proper to have communicated to some one that the application had been rejected?—No.

415. How is it that though Mr. Fleming's letter is on record here recommending the change, we have nothing official to show that that letter has been disapproved by the Department or by the Government?—Why, there is nothing required to be done in disapproval of any recommendation of that kind.

416. Yes, but we have in connection with this, the fact that the recommendation was carried out?—I cannot help that. When a proposal is made by an engineer and is not adopted, it is not necessary to notify other officers about it.

By Mr. Bergin:—

417. Should not the head of the Department or some one acting for him know who made the change, and how it came to be made?—Certainly, but I never knew the change was made; I never heard of it until after Parliament met this year

And the moment I saw it mentioned in the Senate evidence, I wrote to Mr. Trudeau asking him how it come to be done, because I never knew any order to be given.

By the Chairman:—

418. What reason had you for rejecting Mr. Fleming's recommendation?—Among other reasons one was this: I do not remember whether Mr. Fleming was requested by me to extend the quantities of all the tenders to see, in the event of this recommendation being carried out, whether Sutton, Thompson & Whitehead would be the lowest or not on the basis of a change in quantities. I do not recollect that Mr. Fleming did that, but I have some recollection of asking Mr. Trudeau to do it. My recollection is that he reported to me that some other tenders would have been lower than theirs if the same quantities had been carried out as would be required by the change being made. That was one reason why I objected to the change, besides the mere saving of money temporarily. My impression is, though I have not had any conversation with Mr. Trudeau on the point or any communication with him beyond the letter I have already referred to, that Mr. Trudeau, when examined, will recollect that I directed his attention to that point.

By the Chairman.

419. You made up your mind that it would increase their tender if you accepted the change?—My recollection is that it would have increased the cost to about \$70,000, over some other tender, but I speak under correction as it is from memory.

By Mr. Bergin:—

420. Had Mr. Fleming any personal knowledge of the work; had he been over the ground?—He had been over the whole ground once, I think. If he went by the Dawson route, as Mr. Smith says, he would not get any idea of this particular place.

A. MACKENZIE.

The Sub-Committee then adjourned.

(Copy)

EXTRACT from letter written by Mr. S. Hazlewood to Mr. Marcus Smith, February 7th, 1877.

When Contract 25 was advertised for letting, I was at Ottawa; I had then only a profile on the preliminary survey between Finmark and a point a little west of the Fire Steel River, the balance of the profile to English River had to be compiled from Bailey's and Scott's surveys of the previous season, there being no survey whatever over the line as now located; and the greatest difficulty was experienced to find out what point on Bailey's line corresponded with the next end of McLennan's preliminary survey then received, because Bailey's line was very much south of McLennan's; however, the best guess that could be was made under the circumstances, and any discrepancies that may appear have been caused by not hitting exactly a common point.

Mr. Fleming perfectly understood this at the time. The profile, however, recently sent you, is correct.

WINNIPEG, November 6th, 1877.

SIR,—I beg leave to make the following remarks and proposition in reference to the work on Contract 15, with a request that you will submit the same to the Government.

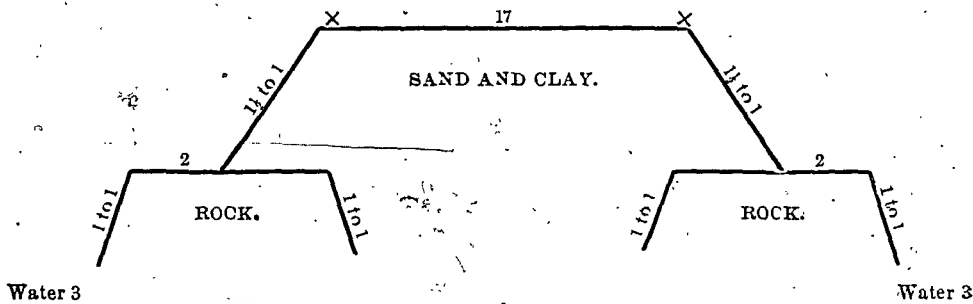
The quantity of rock required to be placed in the base of embankments through lakes, in order to make them wide enough to carry earth embankment subsequently, has to be carried such a distance over intervening spaces as to greatly retard the progress of the work.

The disproportion between the quantity of material in the cuttings and that required to complete the embankments, will necessitate so very large an amount of trestle-work to bridge over the intervening space that I cannot procure a sufficient quantity of suitable timber in the country with which to construct it. I have ascertained by recent investigation and the sinking of test pits that sufficient, or nearly sufficient, material, sand and clay, can be obtained from borrowing pits to complete the whole of the banks; but some of this material would have to be hauled for a very considerable distance.

As, however, the adoption of this course would greatly facilitate my progress with the work, I would beg leave to make the following proposal, which I believe will be found more economical for the Government also in the long run:

If the Government will consent to do away with the trestle-work altogether, and permit me to complete the banks with clay and sand, I will agree to find the necessary material at my present price per cubic yard for earth work and make no charge for extra haul for any of the material required to do this, which has to be procured from borrowing pits.

And I will make up the embankments through water with two rock banks carried up to three feet above high water mark; and having a berm of 2 feet outside the foot of the earth slope, on the plan suggested by you, as in the accompanying sketch, without extra charge.



An early reply will greatly oblige, as it is necessary for me to make special arrangements for the transport of material if my proposal is approved of.

I remain,

Your obedient servant,

(Signed) JOSEPH WHITEHEAD.

JAS. H. ROWAN, Esq.

(Copy.)

CANADIAN PACIFIC RAILWAY,
OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 22nd May, 1878.

SIR,—Mr. Whitehead, on the 6th November last, proposed by letter, addressed to Mr. Rowan, which letter is herewith enclosed, to complete the roadway on Section 15 with permanent rock and earth embankments throughout, in lieu of the wooden trestle-work, which was originally proposed to be built in many places. He proposes to find all the material required for making the solid embankments at the contract price for earthwork (37 cents), and make no charge for extra haul for any that may have to be brought from long distances.

The District Engineer reports, this date, that the contract cost of trestle-work, which would be dispensed with by the course proposed, would be about \$360,000; that an additional present expenditure of \$260,000 on earthwork under Mr. Whitehead's offer, including masonry-culverts, would make all the embankments permanently solid. As trestle-work is always more or less dangerous, especially liable to be consumed by fire during the dry season, in a country such as the one this line goes through, and would have to be constantly renewed until ultimately filled in solid, I am of opinion that it would be sound economy to accept Mr. Whitehead's offer, and, therefore, recommend it.

I am, &c.,

(Signed)

SANDFORD FLEMING,

Engineer-in-Chief.

F. BRAUN, Esq.,

Secretary, Department Public Works.

(Copy.)

OTTAWA, 22nd May, 1878.

DEAR SIR,—Having received from the Division Engineer of Contract 15 the estimate referred to in my letter of the 5th of March last, reporting on the subject of Mr. Whitehead's proposal: "To make the embankments on Contract 15 with earth instead of trestle-work," contained in his letter of the 5th November, 1877, which was enclosed in the above-named letter of mine, I now submit further information on the subject as follows:—

The cost of completing the banks with earth instead of trestle-work will be.....	\$550,500 00
Deduct trestle-work done away with in consequence.....	362,000 00
Balance	188,500 00
Add for masonry and permanent structures, say	70,000 00
	<u>258,500 00</u>

If trestle-work of the value given above (\$362,000) is put in now, its cost at 5 per cent. per annum, compound interest, at end of six years, say..... \$485,000 00

By which time it would have to be either partially or wholly renewed, or replaced by earth filling. If the latter, and if this could be put in at 23 cents per cubic yard, instead of at present contract rate of 37 cents per cubic yard, there must then be a further expenditure of..... 401,500 00

To which must be added, as above, masonry permanent structures..... 70,000 00

Cost at end of six years..... 956,500 00

The immediate increased cost of change (\$620,344) would, if treated in the same manner, amount to the sum of \$831,318.00, leaving a balance in favor of the proposed change of \$125,182.00. Or, putting it in another form, as follows: the result would be: estimated cost of completing now the banks with earth instead of trestle-work:—

Earth, 1,433,281 cubic yards, at 37 cents.....	\$530,313 97
Timber in culverts, &c.....	20,030 75
Permanent structures.....	70,000 00
	<u>620,344 72</u>
Trestle-work done away	361,856 61
	<u>258,488 11</u>
Suppose trestle-work put in now at a cost of.....	\$361,856 61
And that it would last 10 years before being replaced by earth, 1,433,281 cubic yards, at 28 cents.....	401,318 68
To which add timber in culverts	20,030 75
do permanent structures	70,000 00
	<u>853,206 04</u>
Add 10 years' simple interest at 5 per cent. on \$361,856.61, trestle-work	180,928 30
	<u>1,034,134 34</u>
If, for purposes of comparison, 10 years' simple interest, at 5 per cent. per annum, be also added to present increased cost, on account of change.....	\$620,344 72
Interest.....	310,172 08
	<u>930,516 80</u>

Shewing a balance, even this way, of \$103,617.54. To this saving in money must also be added the important consideration that portions, or the whole of the trestle-work, may be destroyed by fires, which are of frequent occurrence in the woods through which the whole of this section of the railway passes.

Should such an event occur, the traffic of the line will be seriously interrupted. Indeed, it is not at all improbable some portions of the trestle-work will be destroyed by fire before the line is opened.

These dangers will be entirely removed by the adoption of the course now recommended.

Yours truly,

(Signed)

JAMES H. ROWAN.

SANDFORD FLEMING, Esq.,
Engineer-in-Chief.

CANADA PACIFIC RAILWAY,
FORT WILLIAM, December 14th, 1878.

DEAR SIR,—Your telegram of 12th inst., asking for a return accounting for the excess in quantities on Contract 25, came duly to hand.

SOLID ROCK.

In reply to the same I would beg to state that west of "Nordland" Station (50th mile) the line of railway passes nearly altogether over a muskeg country, broken only by small ridges crossing the direction of the line, and which in every case where the location had been subsequently revised, all changes were made with a view

of keeping off the rocky ridges as much as possible; in order to admit of the grades being made near the surface, and avoid rock cuttings at the same time, reducing the quantities of that material, as well as affording better facilities for drainage by the side ditches.

LOOSE ROCK.

Ridges that seemed to be soil, and could not easily be avoided, a number of them turned out a large quantity of boulders on being opened, by which the item for loose rock was greatly increased over the quantities in the bill of works, which, together with some cases where the line crossed over a surface containing nothing but boulders covered with moss, at head waters of Oskondaga River, being forced therefore to use them in forming the embankments to some extent (having no other material), and subsequently widening and raising the same with ballast, are the chief causes for the amount of loose rock.

EARTH IN MUSKEGS.

The gradients though seemingly as a rule indicated light fills in the muskegs, it was found, when ground was broken, that the material was of so compressible a nature; that what with the subsidence of the original surface (in some cases 2 feet) and unequally by drainage, giving it the appearance of small waves, as well as that in very few cases were two yards of this material equal to one of clay or sand; and which I in some cases attempted to remedy as much as I could by lowering the grades to follow the changing surfaces, yet despite all my efforts I found that making the embankments of light material thus obtained, took in all cases more than double the quantity that the levels would indicate, if good material could be procured; and at first attempting to respect clause 12 of the general specifications, I found it was inoperative, as there seemed to be but little distinction or choice could be made of this material, and therefore instructed the assistants to have everything taken out of the side ditches, excepting stumps, placed in the banks, and got the late Mr. Hazlewood to go out with me, the only time he was able to reach Port Savanne in the winter of 1876 and 1877; and he, though admitting it was a puzzle, still sustained me in my course of proceeding; at which time he was fully alive to the great increase of quantities that would unavoidably be incurred over that given in the bill of works.

I will here enumerate a few cases by way of comparing the quantities indicated by the levels; and those that went in by actual measurement, viz: 43,375 to 3,436 near the 63rd mile; omitting 100 feet for the bridge, a distance of 6,000 feet. Quantities indicated by the levels, 20,420 cubic yards; quantities by actual measurements, 50,357 cubic yards, an increase of 14 per cent., and total, 44,330 cubic yards per mile. Another, between the 109th and 110th miles, 1,130 to 2,000: Quantities indicated by the levels, 4,242 cubic yards; quantities by actual measurement, 9,878 cubic yards, an increase of 133 per cent., and total, 26,078 cubic yards per mile. Again, from 110th to 111th mile, 1 mile; quantities indicated by the levels, 8,888 cubic yards; quantities by actual measurement, 26,058 cubic yards, an increase of 182 per cent.

In contrast with this I may further compare a portion where the material is a mixture of clay and gravel; from the 43rd to 46th mile, though slightly undulating, it averages only 16,000 cubic yards per mile.

I could cite many other cases similar to those, and a great deal graduated some less, by which you will see that the profile affords no criterion whatever from which to judge or estimate the quantities in such material, the drainage also required by off-takes, many of which were half a mile long, increased the quantities of this item alone nearly 8,000 cubic yards.

TUNNEL.

The cut-off by the tunnel line affects the quantities or money value of work thus: Tunnel line, cost of, \$193,385.00, and by S. line to and from common points, \$99,593.00—\$93,792.00 more than by the S. line, which by itself accounts for nearly \$94,000.00.

TIES.

There were 6,000 ties burnt on the line, May, 1877, near and from Port Savanne eastwardly, by fires in clearing the telegraph line, properly chargeable to Contract No. 4, and also 15,000 burnt this last summer owing to a general bush fire (west of Port Savanne) that had swept over the whole country nearly, burning up everything unprotected that came in its path, including some embankments that were materially reduced by it.

Ties accounted for thus:—

Kaministiquia to Finmark, 9 miles at 2,400 ties per mile..	21,600
Finmark to Eng. River, 80.5 " " 2,400 " ...	193,000
Sidings, 2½ miles at 2,400 ties per mile.....	5,600
Burnt on line.....	21,000
Total.....	<u>241,200</u>

BALLASTING.

With reference to the ballasting I endeavored to account for its overrunning so much in a letter to Mr. Smith, of 3rd October, 1878, which please see.

BRIDGES.

The bridges, as constructed, being much less in cost than what is put down in the bill for them, will pass them over, which, however, would be still lighter were it not for the viaduct at \$1,764; 400 feet long, and most of which was 40 feet high.

CLEARING.

The clearing was increased owing to revisions and changes made in the original location, most of which was done under Contract 25, together with some little clearing done for Oliver Davidson & Co., and deducted from Contract 4.

The close cutting and grubbing are also greater than in bill; in the first place the grades were lowered some, and secondly, from the great amount of side ditching involved, and which merged into borrow pits in some cases. So that an average width of 15 feet on each side was assumed in a great many cases, and in one or two instances more. A difficult matter to determine either correctly or satisfactorily, and the only item that I cannot bring within the bounds of indisputable measurements, which, though I think I made the amount liberal, the contractors claim otherwise.

I have in the foregoing given you all the causes that I know or can think of for the quantities exceeding the bill of works so much; prominent among which are the tunnel and the muskegs.

I am, Sir,

Yours respectfully,

(Signed) R. McLENNAN,
Engineer-in-Charge.

SANDFORD FLEMING, Esq.,
Engineer-in-Chief.

TUESDAY, April 29th, 1879.

Sub-Committee met.—Mr. Plumb in the Chair.

MARCUS SMITH, C.E., called and further examined.

By the Chairman:—

421. What is the distance from Sunshine Creek to English River?—80 miles.

422. From Selkirk to Cross Lake?—77 miles.

423. From Cross Lake to Keewatin?—36½ miles.

424. What is the length of the Pembina Branch?—About 85 miles.

425. I observe in the Return regarding Section 15, that you telegraphed from Winnipeg on the 25th October, 1876, "If Contract 15 is not let, it may be better to defer until my return." Why did you send that telegram?—I had been over the line, and there had been some improvements made in the surveys, and I thought I could ascertain more definitely what the quantities would be.

426. You were not aware that the tenders had been advertized, were you?—I was aware of that, but there was some cause of delay about accepting the tender.

427. As a matter of fact the contract was not let on 25th October, when this telegram was sent; it was not let until 1st January?—Yes.

428. Did you return after sending the telegram?—Very shortly afterwards.

429. Did you make any representation respecting it?—I have a very indistinct recollection of what was done when I got home, but my impression is that the bill of works had already been advertized and no alteration was made.

430. Did you state to anyone that it would be desirable to make an alteration?—I did not interfere when I came home; the matter was advertized.

431. But the contract was not let?—No, but the quantities were advertized.

432. The lowest tenderer did not take the contract, and the next lowest tenderer did not take the contract?—I do not remember exactly what was done; I had a conversation in the office with Mr. Smellie, the chief office assistant, but I do not remember exactly what was done.

433. Then Mr. Smellie made a memorandum which he sent in, saying that if Sutton & Thompson take the contract, he thinks the cost of tunnelling is a great deal too low and ought to be modified; was any attention paid to that?—There was no alteration in the bill of works.

434. I see that the lowest tenderers, A. P. Macdonald & Co., say that they made their tender upon the ground that Section No. 14 would be in such a state of forwardness that they could get their supplies over it; they also stated that they understood the work on that part of the road would be delayed for two years; do you know anything about that?—I know that the date for the completion of Contract 14 was 1st August 1876. That was about the same time that these tenders were advertized. I know, also, they were so far behind with the work on Section 14 that there was no chance of it being completed for some considerable period—a year or two—after that time. I could not find out that there had been any extension of time granted to them by the Government; they were simply allowed to go on beyond the time at which the contract should have been completed, and no official communication took place regarding it.

435. Mr. Whitehead seems to have had some connection with No. 14, prior to his becoming a contractor with Sutton & Thompson?—Whitehead's work is a subsequent thing; it was taken to complete a portion of the east end of the contract; he had no connection with it before.

436. The completion of No. 14 would have materially lessened the cost, to the contractor of going on with No. 15, would it not?—No doubt; Macdonald gave up the contract on account of No. 14 not being completed.

437. Macdonald's tender was the lowest; in his letter he says he could not prudently sign the contract without some assurance that he would be able to use No. 14, or would be compensated for not having the use of it. Now, in your opinion, would it not have been in the interests of the Government to have pushed on the

work on No. 14 for the purpose of accommodating the lowest tenderer on No. 15?—There is no doubt that the delay in completing No. 14 must have had a serious effect on the tenders for No. 15.

438. Mr. Braun writes, on the 14th October, acknowledging the letter, and saying that the Government cannot consent to any modification of the conditions laid down in the specification for this work. Was there anything in the specification, that you know of, or in any negotiation the Government made, indicating that the work on No. 14 would be completed so that the contractor on No. 15 could use it?—I am not aware of any notice being given intending contractors on Section 15 that that would be the case; there is no doubt, from the fact that No. 14 was publicly let to be completed on the 1st August, 1876, that persons tendering for No. 15, and becoming aware that No. 14 would not be completed, would be justified in withdrawing their tenders, as it makes a material difference in the cost of their work. The non-completion of No. 14 would be very good ground for objecting to take a contract unless there were some modifications made on that account.

439. There are two branches of this enquiry; one looking to the interests of the country, the other to the interests of the contracting parties. Would it not have been, in your judgment, desirable that the Government should have at least attempted to force on the work of No. 14, in order to facilitate the letting of the work on No. 15 by the contractors who made the lowest tender?—Certainly; and the attention of the Government was called to it at that time; representations were made to the Government complaining of the delay in the progress of the works on No. 14, and urging the Government to take some action; there is a clause in the specification which gives them power to do so; and the Government was asked to use that clause to compel the contractors to complete the work within some reasonable time, as the failure to complete it was a great hindrance to the contractors on Section 15.

440. Then, in fact, any favor shown to the contractors on No. 14, allowing them to drag along with their work, militated against the interests of the Government in the work on increasing the cost of No. 15, and in a large measure preventing the acceptance of the lowest tender on that section?—That depends upon whether the person tendering knew that the work on Section 14 was so much behind.

441. Here is the fact; here is the letter from Macdonald & Kane, in which they say:—

"In making out our tenders for Sections 14 and 15, Canada Pacific Railway, our figures were based upon the early completion of Section 14 by the present contractor, as a means of transportation by rail between Section 15 and Red River, believing that a large quantity of the timber and ties required would have to come by way of that river.

"The above mentioned means of access caused a reduction of 25 per cent. to be made by us in our bid, as we were of opinion that the track-laying on Section 14 would make it available by August, 1877.

"This would give us connection with the west end of Section 15, upon which a large amount of work has been done with no other means of access without a very heavy outlay. From the best information we have, the contractors of Section 14 have been granted an extension of time, so that it will take two years before that section could be made available to carry men and supplies. Believing, as we do, that the Government in connecting the track-laying, ballasting, &c., of Section 14 with Section 15, that it would facilitate and lessen the cost of Section 15.

"On account of the above mentioned facts, it would be imprudent in us to enter into contract unless we are put in possession of the advantages which the specification and form of tender lead us to believe and base our calculations upon.

"Now, if the Government will make good to us the difference between bringing men and supplies by mail over Section 14, and the most available route by land and water from the 1st August, 1877, such time as Section 14 is completed, and extend our time of completion in accordance with the delay of getting track to Section 15.

"We are prepared to enter into contract and furnish the necessary securities required.

"We are certain that it will be difficult for the Government to get good, experienced contractors to take the work unless the advantages of access could be granted them.

"Hoping you will favorably consider our requests, which we believe we are justly entitled to, and should be fairly understood before entering into contract."

In reply to that Mr. Braun neither states that the Government have extended the time nor that they have not; he simply says, "we want to know whether you will sign the contract or not?"—I may say I recognize what Mr. Macdonald says there to be facts. I perfectly agree with him in his contention, and I think his letter shows a just appreciation of the true state of the case.

442. There is another question I wish to ask you in regard to the general work. I observe that in one or two contracts the amount of ballasting is specified; for instance take Contract 25; there is on that 180,000 cubic yards estimated, which I suppose is for the whole length of the road. There is a rule in ballasting for the depth, I suppose, so that in estimating the measurements a very tolerable accuracy can be obtained?—Yes.

443. There were 180,000 cubic yards of ballasting required on Section 25, and it was taken at 38 cents. Is that a good price?—That is a good price.

444. Is it high?—Rather high.

445. I should say it was, because I see ballasting on other contracts is taken at 33 cents?—Yes; it depends upon the distance it has to be carried, but still that is a good price.

446. I observe that 198,000 yards have been already done, and there are still 100,000 yards more to be done; that would indicate that there was an increase in the quantity of 118,000 yards; is not that a very great disproportion?—Yes; I think I explained that before; in going over the work I called the engineers' attention to it, and asked him to explain the cause of the increase. And, as I said before, the quantity placed in the bill of works, on which tenders were asked, was not intended to complete the ballasting of the line; it was to do half ballasting on one lift of the rails; if full ballasting were done it would require two lifts of the rails. This, as I said, was only an estimate for one lift of the rails; on the approaches to the culverts and bridges the ballasting has to be done to the full height, and where there is a steep gradient there had to be an extra quantity of ballast to enable the engine and train to get up to the bridges. That, however, would account for only a small quantity, a good deal of it has been full ballasted.

447. Do you know whether this ballasting has been used in any case to supply the place of ordinary earth embankments?—Yes; to a very considerable extent.

448. Under whose direction?—Under the direction of the engineer in charge; the embankments had gone down, and they had to be made up with ballast.

449. You will observe that the price for embankments was only 33 cents a yard, while the cost of ballasting was 38 cents a yard; was it more economical to put in ballast at 38 cents instead of filling up with earth?—Not generally; I called the engineers' attention to that, and I understood that the embankments had gone down in many places after the ballasting had commenced and was partially done. Then, I complained that they had shown either a want of attention or a want of judgment in not making a sufficient allowance for shrinkage. They did not make the proper allowance for shrinkage; but, after the rails were laid and ballasting had commenced there was no other way of making it up than by ballast.

450. But there was already an increase in the earth work of from one million cubic yards to 1,970,000?—I cannot account for that; I have tried to account for it, and there are only two ways of accounting for it; either the original quantities were wrong, or the measurements for work executed were wrong.

By Mr. Oliver :—

451. Which is the most likely to have been wrong; the first measurement or the second?—In many cases the first measurement was undoubtedly wrong; there may have been errors in the second, but I cannot say. In the first measurement, as I have pointed out, if the surveys were made over frozen ground, and no allowance was

made for the swampy nature of the ground, the quantity taken from the profiles would undoubtedly be wrong.

By the Chairman:—

452. Then, it comes down to this, that there is no safety in this system of letting the work?—There is no inducement for any one to be economical; the contractor gets paid for what he does, and if he gets an item that is paying him well, he will try to get the most out of it.

453. That is the effect of inconsistent tenders?—Yes.

By Mr. Bergin:—

454. Have you ascertained who the engineer was who prepared the estimates?—I have not; Mr. Rowan is on the way, and he will be able to explain that.

455. Mr. Mackenzie, in answer to a question the other day, stated that when Mr. Fleming left for England, you became chief engineer; did Mr. Fleming before he left—that is the last time he left for England, in the spring of last year—give you any instructions as to alterations on Section 15?—No; he did not; I had no communication with Mr. Fleming whatever during the time of his last visit here.

By Mr. Haggart:—

456. You had no instructions from any one in the Department as to the change in the character of the work on this section?—None whatever.

By the Chairman:—

457. Do I understand you to say that you had no communication with Mr. Fleming?—Not on any subject, and I could not tell the reason why.

458. You were in charge of the work?—Yes; before he arrived and after he left.

459. During the time of his absence, you had practical charge of the works?—Yes.

460. When he came back in April did he confer with you or ask you the condition of the work?—In answer to that question, I had better relate just what took place on March 29th of last year. I sent into the Department a report on the surveys on the Pacific Railway. I heard nothing more about it until sometime afterwards; in the meantime I heard that Mr. Fleming was on his way here. It appears that he had been telegraphed for without my knowledge, and I only knew a day or two before he arrived that he was coming. He came and remained in the office for some weeks, I think. He never asked me a single question about the surveys, or about any information I had obtained respecting them during his absence of a year and a half, or about the works, and he went away without giving me any instructions. He wrote a report without my knowledge. I never saw the report before it was presented to the House; there were some things in it with which I did not agree, and to which I have had no opportunity of replying. When he returned this last time, I asked him in a friendly way why he did not consult me about information I had obtained in his absence. He said, "Your report was before me." I said, "My report was only a synopsis of the information I had obtained, and if you had communicated with me I could have given you a great deal of information." He said, "I was instructed not to communicate with you."

461. Who would be likely to instruct him not to communicate with you?—It would be the Minister, I suppose.

By Mr. Bergin:—

462. Had anyone but the Minister power to instruct him?—I think not.

463. Have you a copy of the report to which you refer?—It is printed.

By the Chairman:—

464. Was there any illustration with that report?—There was a map illustrating it.

By Mr. Bergin:—

465. Has that map been published?—It has been printed. It was prepared with great care—not by myself alone. It was prepared to illustrate my report and covered ground from the Red River to the Pacific, 2,000 miles of country. On it the several routes were described. It was impossible for anyone to follow a description of

country 2,000 miles in length without some map to illustrate it, so I prepared a map from the best information obtainable—information from all the engineers on the staff who had made surveys between Red River and Edmonton, from the Surveyor General's staff, who were making surveys in that country, from the geological staff who were exploring that country as far as the Peace River, from Professors Selwyn, and Marcoun. I also spent several weeks myself between Red River and the Rocky Mountains, and I consulted with everybody who had any knowledge of the country, including Bishop Farrer, who has spent twenty-five years in the country. I spent a day with him, and he sent for trappers, hunters and Indians, who knew the country. I consulted with them, and their information was translated to me. I also saw the Hudson's Bay officers. In fact, I took the very best means of getting information; and the map was made from the information so obtained. It was approved by Mr. Mackenzie, and 2,000 copies were ordered to be struck off. They were struck off; most of them are in the office now. Some two months after Mr. Fleming left, reports on the location line of the Canadian Pacific Railway were printed. I looked at them and found my report there, amongst others, of which I have no reason to complain. I think the printed report is a correct reproduction of my report, but there was no map with it. I wrote a letter to the Secretary, which I can produce, calling his attention to the absence of the map. I pointed out that it formed a most essential part of my report, and that I thought it was not only unjust to myself, but unjust to the public, that it should not be published, as its non-publication was calculated to keep from the public information it otherwise would obtain. I suggested that, as the maps were printed and approved, a copy should be sent out with each book, but to that I got no reply. I did not know why the map had been left out until Mr. Fleming returned last October or November. I then inquired of him what was the reason, and he owned that it was by his advice the map was suppressed, and that Mr. Mackenzie had nothing to do with it.

By Mr. Haggart:—

466. What reason did he assign?—The reason given was the coloring. This was a general map, you will understand, and its object was to give the public a general idea of the country. On the plains, between Red River and the Rocky Mountains, there are great variations of soil. For instance, near the international boundary line there is a large portion of the American desert which projects some distance into the Dominion. Next, are the buffalo plains, with different soil; and so on. There are parts where there is a very marked distinction in the quality of the soil; these I showed on the map by notes in the margin in the same colors as the colors on the map. The note in one color, for instance, gives the description of the predominating character of the soil in the areas similarly colored. Mr. Fleming's objection was this: he explained to me that we could not show a hard and fast line between two districts showing different soils, as, for instance, there might be a clayey soil and sandy soil intermixed, where only one class of soil was marked. I said, certainly we cannot tell exactly where one soil joins the other, as they interlace or overlap each other, but on the map I showed a general average line of where the different soils begin and end; the same as is done on a geological map. On a geological map, if they want to show a coal district by a color, they have to show the limit by a line of some sort, but there is no one who expects that under every square yard of the district so colored coal will be found. Everyone knows the coloring means that coal is the predominating mineral of that district. The same way with my map. I was careful not to mislead anyone, and explained this in the report so as to prevent the possibility of anyone being misled. But Mr. Fleming said the report might be separated from the map, and people would be looking at the map without seeing the report. I said that to avoid that, I would make an extract from the report, and place it on the margin, alongside of the description. That I have done, and there ought to be no further objection to the map.

By Mr. Bergin:—

467. Who instructed Mr. Whitehead to make the change in the work, and who authorized the payments; Mr. Mackenzie states that he reported to Council against

its being done?—I thought I explained that before; I knew nothing of the change at all; the letter of Mr. Fleming recommends it.

468. You were Engineer-in-Chief when Mr. Fleming went away; the payments were made monthly, as usual, I suppose, during the term you were in charge, and you certified to the payments?—I certified to the payments, but that has nothing to do with it; the payments have nothing to do with the change; Mr. Fleming, I believe, made that recommendation for the change on the 22nd May.

469. And Mr. Mackenzie, as Minister, reported against it on the 12th June?—I did not leave Ottawa until about the 24th July; that was two months after Mr. Fleming made the recommendation. I had a conversation with Mr. Mackenzie the day before I left, discussing the works generally, referring to matters that required attention—contractors' claims and other matters to be settled; but there was no mention made to me of this change. That was most extraordinary to me, as certainly there had been plenty of time for Mr. Mackenzie to consider the matter and give me instructions. But I did not know application for the change had been made.

By Mr. Haggart :—

470. Then, when did you first see the copy of Mr. Fleming's letter to Mr. Braun?—I did not see it till about the 18th or 19th September; when I left Ottawa on the 24th July I had no instructions whatever in regard to that change of work. No mention had been made of it, and I did not know the application had been made for the change.

By the Chairman :—

471. You did not know Mr. Fleming had written the letter?—No; I did not; when I arrived on the works they were going on making the rock embankments.

By Mr. Bergin :—

472. What time was that?—I could tell the exact date if I had my diary, but I think I got to Whitehead's contract at the beginning of September, or more likely at the end of August. I walked over all the works with Mr. Carre, the Resident Engineer under Mr. Rowan, and with Mr. Whitehead. I took notes as I went along, and I found that they were making stone embankments such as I see are proposed in Mr. Rowan's report.

By Mr. Haggart :—

473. You saw that report?—I saw it at the last meeting of the Committee. I find also, from a letter of Mr. Rowan's, that it was submitted to me, but I never went through it. As I was saying, I found them making those stone walls—protection embankments—though it did not follow that they were to be filled in with earth. They would still have been necessary if the trestle-work had been used. They were intended to protect the earth whenever it should be used—now or in the future. Mr. Rowan was not there; he had been there before and returned to Winnipeg. I went over the work, and it was September when I arrived at Winnipeg. I asked Mr. Rowan what he was doing. I said,—"You seem to be following out the plan suggested in your report last year that you had before the Public Accounts Committee." He said,—"I do not know whether I ought to or not." I understood him to say that Mr. Fleming had told him to go on in that way until further instructions were received; he also said,—"We are waiting for you for instructions." I said, "I have no instructions to give you; you know that I had no communication with Mr. Fleming, and that you and Mr. Fleming and the Minister were in communication; I left Ottawa without any instructions whatever about this work and I expected to get information from you, so that I might know what was going on." He said, "There is the letter Mr. Fleming sent into the Department; all that I know about the thing is, the letter sent in by Mr. Fleming to the Department, before I left, recommending these changes—the using of embankment instead of trestle-work." I said, "I have never seen that letter; will you telegraph to Ottawa for a copy of it."—He did so, and here is his telegram.

"WINNIPEG, Sept. 7, 1878.

"To W. B. SMELLIE,
"Ottawa.

"Send copy Whitehead's letter offering to fill banks with earth, and Fleming's report thereon.

"J. H. ROWAN."

Here is the letter from Mr. Smellie in reply:—

"OTTAWA, Sept. 10, 1878.

"DEAR SIR,—As requested in your telegram of the 7th inst., I herewith enclose copy of the whole correspondence on the subject of permanent embankments on Contract 15, instead of trestle-work, viz.:—1. Report by Mr. Fleming, dated 22nd May, 1878; 2. Report by James H. Rowan, dated 22nd May, 1878; 3. Proposal of Jos. Whitehead, dated 6th November, 1877.

"Yours truly,

"W. B. SMELLIE.

"P.S.—Nos. 1 and 3 are the documents specified in your telegram."
"JAS. H. ROWAN, Winnipeg."

I see that the letter did not leave Ottawa till 10th September; I think I got it about the 18th or 19th. I asked Mr. Rowan if he knew whether that recommendation of Mr. Fleming's had been approved or not. He said, "No."

By Mr. Bergin:—

474. Did he mean that it was not approved, or that he did not know if it was approved or not?—He did not know whether it was approved or not. I made the remark, "It is very strange that a document involving changes so important should have lain two months at Ottawa without any reply to it." It was a document that urgently demanded a reply, because the contractors and the engineers were kept in a state of doubt as to what to do in the meantime.

By the Chairman:—

475. The documents of the engineer and contractor needed a reply?—Yes; most urgently.

By Mr. Bergin:—

476. Mr. Mackenzie said in his evidence: "It was not my duty to communicate to every one in the Public Works Department what we had been considering, and it was not my duty to communicate to any officer a negative decision; it was my duty, if we made any change, to communicate the change, which would be done in the regular way, but we made no change, and we had nothing to communicate?"—That may be Mr. Mackenzie's opinion, but it is different from the course adopted on other works I have been engaged on. It seems to me to have been a most important suggestion requiring a decision as soon as possible; and the engineers and the contractors were left in a state of doubt as to what to do until they got a reply.

By Mr. Oliver:—

477. Is it not the duty of the contractor to carry out the terms of his contract until he is notified by the proper authority that the character of that work is changed?—If a contractor has made a very important suggestion, and is waiting for a reply, he will go on until he gets a reply with the works as originally contracted for, unless instructed otherwise.

478. Then, it really was not necessary for the head of the Department to communicate with the contractors or public officers until the terms of the contract had been changed; is it necessary that communications made by contractors as to changes in the character of the work should be replied to by the officers of the Department, or by the head of the Department, when no change is allowed?—I consider that application ought to have been replied to.

By Mr. Bergin:—

479. Practically, further work on the contract should have been stopped by Mr. Whitehead until the suggestion was answered by the Department?—No; there was plenty of work for the contractor to go on with which would not interfere with one system or the other.

480. But he could not go on with work under the original system until he had heard from the Department?—There was a portion of the work, applicable to either system, that he could go on with.

By Mr. Oliver:—

481. But there is this point to be clearly understood: when a contractor knows what he has to do by the conditions of his contract, it is his duty to follow out those conditions until he is authorized by the head of the Department or some one having authority from the head of the Department to change the terms of that contract?—He has done so, so far as I know; I know nothing to the contrary.

482. You were Chief Engineer when those changes were going on; did you notify the Department in any way that the character of the work had been changed?—That is a question I am glad you have put. I was in a very peculiar position. Those changes had been made without my knowledge, but I knew that such changes were very seldom proposed by an engineer without previously being aware that they would be accepted. I don't say that that was the case in this matter; but, occasionally, proposals were discussed verbally before a letter was sent in recommending them, and my conviction then was that Mr. Fleming must have had good ground for believing the suggestions would be accepted before he sent in his letter. That, however, is simply an opinion. The question you put to me is very correct, and I am glad you have put it because I am placed in a position in this matter that may look as if I had neglected my duty. You will observe that I did not get this letter proposing the change till about the 19th or 20th September last year, when I was in Winnipeg. There was no time then to indicate to the Government that the change had been made; practically there was no Government in existence; the Government was defunct and might have ceased to hold office before I could communicate with them. I could, by a telegram, send a categorical question and get a categorical answer as to whether these changes were approved or not; but I had a great deal more to ask than that about the works, having gone over them and taken notes of everything that was being done. I found that on many portions of the work neither system was applicable, and that some further communication would have to be made with the Government in regard to modifications in either system. I could not represent all that by telegram, and I had no idea if I sent a letter that the Government would have time to reply to such questions as I had to ask, or that they would be in existence. I had simply to assume that Mr. Fleming's recommendation had been accepted, and at all events, to allow the contractor to go on with these stone embankments until further orders. I was in great doubt what to do. Mr. Rowan asked me for instructions; I was in that position that I could not very well give him definite instructions, but I did the best I could. I made some alterations in the line to reduce the work, that did not affect either way of building the road; and I telegraphed to Ottawa for boring tools so as to get full information regarding the swamps, lakes and other matters. I also gave Mr. Rowan instructions to make complete measurements of everything, including water tunnels, and to make a complete report, giving all the quantities required to finish the work, so that when I returned to Ottawa I should be able to lay the whole thing before Mr. Fleming, who was on his way home. I finally placed the matter in Mr. Fleming's hands, went to other work, and had no more to do with it. I may tell you that I found on that section, just as on other sections, that the excess in quantities was not due to the changed character of the works alone, but, to a great extent, to the want of the necessary preliminary information. I instructed the Engineers to get the information that ought to have been had before the contract was let, and I told Mr. Rowan to get every information necessary to enable us to remodel the work.

By the Chairman :—

483. Then, I understand you to say that the excess in the quantities and in the cost was not altogether due to the change in plan, but, to some extent, to the imperfect information?—Imperfect information given before the contracts were let.

By Mr. Haggart :—

484. Has there been any action in the Department, under the present Government, in reference to this?—I have no knowledge. Mr. Fleming communicates with the Minister; I do not.

By the Chairman :—

485. Would the work be going on in the winter time?—They have been going on with the work all the winter, but I have had no report on it. I instructed Mr. Rowan to send monthly reports of progress, and the nature of the work done, but he has neglected to do that. I complained to Mr. Fleming that the reports were not coming in, and Mr. Fleming wrote sharply to him, requesting him to send reports; so that we do not know what has been done during the winter except from the certificates of the quantities, and they show that most of the quantities were rock work.

486. The office goes on paying, though?—We have received certificates of work done, and it appears from these that the principal work has been rock work, and that there has not been much filling up with earth done instead of trestle work. What struck me was that the contractor seemed to expect that the work would be changed, as he made no provision at all for trestle-work.

By Mr. Bergin :—

487. He must have understood that there was to be a change?—That led me to believe that Mr. Fleming's communication had been approved by the Government, and the contractor seemed to understand it so by making no provision for trestle-work.

By the Chairman :—

488. By the contractor you mean the man in charge?—No; Mr. Whitehead, who is the contractor.

489. No; Sutton & Thompson are the contractors?—They were the people who got the tender, but Mr. Whitehead bought out their contract.

By Mr. Oliver :—

490. How long did you act as Chief Engineer?—For two years.

491. How long after the change of Government?—Probably three weeks; at all events, until Mr. Fleming came home, and that was at the end of October or beginning of November.

By Mr. Bergin :—

492. At what time did you get back to Ottawa?—In October.

493. Were you here before Mr. Fleming?—Yes.

By Mr. Oliver :—

494. And you had no communication with the Department with reference to the changed character of the works?—No; the notes I had taken were notes that required consultation with the Chief Engineer and not with the Minister.

495. But there was no communication with the Department, with reference to the change of the work made by you to the Department, either before or after the election?—No.

496. It appears you were surprised that the character of the work was changed without your knowing anything about it?—I was surprised that it had been done without my knowledge, as I had to act as Chief Engineer.

497. And from the time you were appointed Chief Engineer up to the time of the return of Mr. Fleming there was no communication between you and the Department with reference to the change in the works?—No.

By the Chairman :—

498. Mr. Mackenzie states in his evidence that he did not recollect talking with you about this particular matter, although he discussed with you exhaustively the various matters to be attended to when you went up there?—He never spoke of that at all, and it is a most important thing.

499. You consider this one of the most important matters?—I should have expected this to be one of the first subjects mentioned.

500. You do not recollect anything taking place in that connection with Mr. Mackenzie?—I was totally unaware of any proposal having been made, or any letter having been written by Mr. Fleming.

501. I understood you to say that Mr. Whitehead is now sole contractor?—I understand that he purchased the contract.

502. That he purchased the interest of Sutton & Thompson?—Yes.

By Mr. Bergin :—

503. Do you know what he paid for it?—I do not.

By the Chairman :—

504. Did he buy that before he went on with the work?—Yes I believe so; before he commenced work.

By Mr. Bergin :—

505. Did you ever compare the estimates furnished the sub-contractors by the engineers with the estimates that were furnished to the contractors themselves each month?—No; I never saw any estimates for sub-contractors.

506. Have you heard, or do you know, that the sub-contractors, or many of them, are under the impression that the contractors got a much larger estimate each month than they did?—I have not heard it.

By Mr. Haggart :—

507. In regard to the surveys: What is the total cost of the surveys for the Pacific Railway?—I do not know at all.

508. Not beyond what appears in the Public Accounts; the cost is there stated at over four million dollars?—Yes.

By Mr. Bergin :—

509. That is from the commencement to the present time?—Yes.

By Mr. Haggart :—

510. From the information you possess, what should the surveys have cost?—That is a very difficult question to answer. It is not like an ordinary survey where there are means of communication, in which case the cost can generally be estimated at so much per mile—that is in a settled country or one where there are roads and means of communication through it. A very large amount of money has been spent in exploring the country, cutting trails, and taking provisions in.

511. Making all those allowances, should the survey have cost any such sum as it has cost?—The sum is excessively large.

By Mr. Bergin :—

512. What steps were taken by the Department or by the Chief Engineer to see that the gentlemen employed to make surveys were really thoroughly qualified and efficient persons?—That is a question I cannot answer; the Chief Engineer is the sole person who can answer that question.

513. Do you know anything of the character, in an engineering sense, of the gentlemen, in charge of the different sections, who made the estimates on which the certificates were issued and payments made every month?—I know some of them.

514. Do you know that they are competent engineers?—It is not in my province to pass an opinion upon them.

515. Is it not highly desirable that these men should be competent?—Certainly.

516. I asked you, the other day, whether Mr. Sandford Fleming, the Chief Engineer, had personally gone over the line of the Pacific Railway, or had inspected the works?—The only time Mr. Fleming was on the line, or, I might say, in the country, was in 1872. He made a journey from Halifax to the Pacific coast; he went over with a party.

517. Did he go then in his capacity as Chief Engineer of the Pacific Railway?—He went as Chief Engineer, and had with him Rev. Mr. Grant, who wrote the book "Ocean to Ocean." He acted as Secretary and took notes.

518. Was Mr. Fleming then making a survey?—No; he simply travelled across the country. The first time he struck anywhere near the Pacific Railway was at

Thunder Bay, on Lake Superior. He went from there over the Red River road, generally called the Dawson route, by canoe, and across the various lakes to the north-west angle bordering on the Lake of the Woods; from there he went by road to Winnipeg; from Winnipeg he travelled by cart on the usual trail. There are several trails, but the way he went was by Fort Ellice, the Touchwood Hills, and then to Fort Carleton, on the Saskatchewan. Then he travelled up the north side of the Saskatchewan by Fort Pitt, and Victoria to Edmonton. From Edmonton Mr. Fleming travelled by way of St. Ann to the Yellowhead Pass. He struck the line subsequently run at River Pembina, at the foot hills of the Rocky Mountains. No part of his journey before that would show him any part of the line. From that point he went by Yellowhead Pass down the Fraser, the Albada, the Thompson and the Lower Fraser, to New Westminster and Burrard Inlet. He travelled in the same valleys in which one of the lines has been run.

519. Which of the lines?—What is called the Southern line, or Burrard Inlet route. That is the only line he saw anything of. I met him on my way up the Thompson, some 250 miles up from Kamloops, and returned with him. I went with Mr. Fleming and party up Bute Inlet; we stayed at the Inlet over night, and Mr. Fleming saw the Inlet, but he did not see anything of the line in the interior. He then returned to Victoria, and went by steamer round the south end of the island and up Barclay Sound to the head of the branch called the Alberni. That is all Mr. Fleming has ever seen of the railway.

520. Have you been over the roads since it has been located?—A large portion of it.

521. Please state what portions you have been over?—I had charge of the surveys in British Columbia as Deputy Engineer-in-Chief from 1872, up to the spring of 1876.

522. Where were your headquarters?—I rarely had any headquarters; I was like the Indian always in the field. Victoria was my headquarters in British Columbia, and Ottawa was my headquarters here; but during the whole season I was very few days in Victoria. I did not simply give instructions to my staff to do so-and-so, but I went ahead of them as far as ever I could, and as often as I could, with a small party, chiefly Indians, and explored the country on the different routes. I sent back the results of my exploration from time to time by Indian messengers,—sketches of the country, instructions where to run the line, and I even marked the line at some places by stakes and blazed trees, and described them to the party, and the surveys were made in that way. I really led the surveys and know the details on nearly all the lines. Sometimes the parties would be so numerous that two or three different routes were being surveyed at the same time, and as it was impossible for me to get ahead of all, I had to give the best instructions I could in those cases, so that as regards the surveys in British Columbia, I think I have gone over nearly every route that has been surveyed; the different points are so clearly fixed in my memory that I could direct generally the construction of the line from Ottawa or anywhere else.

523. You could direct the construction of the railway from Ottawa, having made yourself personally acquainted with the routes?—I could direct the construction of the line generally from Ottawa, London or anywhere else.

MARCUS SMITH.

Mr. F. BRAUN called and examined.

By the Chairman:—

524. There were three separate bills of works for Section 15; one some time in the spring of 1875 for which tenders were received. Those tenders were cancelled, nothing being done with them. In May, 1876, another bill of works was prepared,

and again in August there was a bill of works prepared?—There were three series of tenders called for; the first were in January, 1875, the second were received in May, 1876, and the contract was given on the tender of September, 1876.

525. I would like to get a list of tenders received?—(*See tenders appended.*)

F. BRAUN,

Secretary.

Mr. SMELLIE called and examined.

By the Chairman:—

526. There is a memorandum of yours with respect to tunnelling: was anything done about it?—I am not aware that anything was done about it.

527. You say:

"I refer to the several items of tunnelling, the rates for which are so low, that the actual cost of excavation will exceed the amount allotted in the tender by at least \$100,000."

"Should this tender No. 3 be reached in the letting of the contract, and the same be accepted, there must of necessity be a re-arrangement of the rates, *i. e.* reducing the price of other works to meet the bare cost of the tunnelling, which is really the first work to be executed; but, at the same time. I do not think it possible the other prices can be reduced to the extent of meeting anything like this great deficiency.

(Signed)

W. B. SMELLIE."

Line Tunnel	425	\$30	\$12,750.	\$135 =	\$57,375
Stream Tunnels					
20 feet.	200	26	5,200	108 =	21,600
16 "	160	18	2,880	80 =	12,800
12 "	320	14	4,480	50 =	16,000
8 "	450	9	4,050	30 =	13,500
6 "	1,300	7	9,100	25 =	32,500
			<u>\$38,460</u>		<u>\$153,775</u>

Did you mean to say that you proposed to keep the aggregate amount the same and reduce the other works so as to cover this?—That is sometimes done in contracts.

528. Was any attention paid to this?—There never was.

529. It was asked for and laid before the Deputy Minister?—It was asked for and handed to the Deputy Minister; I forget just now about it, but no doubt some suggestion was made about it.

W. B. SMELLIE.

WEDNESDAY, 30th April, 1879.

Sub-Committee met.—Mr. PLUMB in the Chair.

Mr. SANDFORD FLEMING called and examined:

By the Chairman:—

530. The Committee wish you to explain the system upon which the contracts on the Pacific Railway are let. They are let, we understand, on bills of works and estimates. We want to know how the quantities are ascertained?—I shall be very happy to furnish all the information which I possess. I may be unable to

remember all the details. I do not usually bother my mind with figures, because I am not capable of carrying them, but by reference to the records I can obtain the figures for you. With regard to letting out contracts, surveys are first made through the forest, and profiles of the line on which works have to be constructed are plotted, and approximate quantities are calculated from those profiles. Those quantities are put together in the form of a bill of works, which bill is exhibited to contractors and they are invited to put opposite each item their own prices. When the tenders are received the quantities are moneyed out at the rates put in by the contractors, and the total amount arrived at in each case. Those total amounts are a guide to a comparison of the tenders, and upon these tenders, contracts are generally let. That is, in brief, the system.

531. The quantities are made up here?—The quantities have been in every case, made up in the office here I think.

532. Do you suppose these quantities are usually anywhere, nearly exact?—It is desirable to have them as correct as possible, but it is not by any means possible to have them exact under the circumstances.

533. Should there be any great discrepancy in them?—It has been proved that there have been discrepancies; that quantities executed in some cases have greatly exceeded the quantities originally ascertained.

534. That, being the case, is there any safety in letting contracts upon that principle?—I do not know any better way under the very peculiar circumstances of the case.

535. Were the surveys between Red River and Fort William sufficiently advanced in your opinion to justify the letting of the contracts at the time they were let?—I think so under the system. They were not, and are not now, sufficiently advanced to give precise quantities for every kind of work.

536. I do not speak of precise quantities, but when contracts are let, should there not be some near approximation to the amount of the different kinds of work?—It is desirable that the approximation should be very close, and we endeavor to have the quantities as accurate as we can get them.

537. When contracts are let, as I see by these returns has often been done, on what are called inconsistent tenders, where there is a high price for one kind of work and a low price for another kind, is it not still more desirable that the quantities should be closely ascertained?—In every case it is desirable.

538. But in such case it is more desirable than in any other case?—Certainly it is.

By Mr. Mackenzie:—

539. Why?—Because it is possible when the quantities are what we call inconsistent that the tender which appeared to be the lowest may not prove to be the lowest.

540. But that may go the other way?—Well, as a matter of fact, it would appear that such is not the case.

541. For instance in the last tender you advised us to accept, three-foot iron pipe is placed at \$5 per lineal foot, while in another tender it is placed at \$50. In that case, the very inconsistency would be the means of saving money to the country, would it not?—I do not think it is desirable to have those inconsistencies by any means.

542. The question was put as to whether it was not more desirable because the quantities are not ascertained. I want to call your attention to this, that the profit may be one way and it may be the other?—Those items are usually small compared with the main items, and do not affect the total very materially. In regard to the very item you mention there is not very much in the whole work.

542 a. Then, cross laying of timber; there is a good deal of that?—No; I do not think there is much. Those are very incongruous rates.

543. In that case the inconsistency would not affect it very much either way?—It has been found over and over again that the system is a fair one for comparing tenders. We have taken the various contracts that have been let between

Fort William and Selkirk, and although the quantities executed and to be executed have differed materially from the original quantities presented to the contractors before the tenders were received, the new quantities moneyed out at the rates do not materially affect the relative value of the tenders received.

544. You were always strongly of the opinion that this was a fair and proper method?—I am still of the same opinion. I do not know any better way; if I did, I would be pleased to see it carried out.

By the Chairman:—

545. What other systems are there in which Government works are built?—The only other system is the lump sum system; of course that is a system under which all the quantities are estimated as exactly in the first place as they can be estimated, and it might be followed in a country like England, where ordnance surveys have been accurately made and detailed information gathered, but in a wooded wilderness, where these sources of information are absent, we cannot get the detailed information without a very great deal of delay.

546. Of course under the system followed here, under which it is possible that inconsistent tenders may be sent in, and glaring inconsistencies upon principal items may occur, it becomes necessary that the approximate quantities should be as closely ascertained as possible?—Theoretically you are correct; a case can be conceived that would prove the system not perfect, but I have not seen the case yet.

547. I only wish to ascertain whether there is any way by which the enormous discrepancies that have taken place in these contracts can be avoided, because it is evident that you cannot know where you are in any contract under this system?—I do not see that; the principle of the contract is that the contractor gets paid for what he does and no more; he does not get paid for what he does not do.

548. But suppose a contractor takes certain items at a low price, and certain items at a high price; and suppose the low priced items are struck out, it leaves him with a very large amount of work at high prices, and spoils the average price of the work altogether?—It affects the average; it may not spoil it, and it may not at all affect the relative values of the original tenders.

549. Would you say that as a rule it would not affect the relative values?—As a rule it does not; I hold, however, that there may be exceptions to the rule, though I have not come across exceptions yet.

550. Can you explain why No. 13 Contract, which was made from Fort William to Shebandowan, was changed; why the route was changed and the contract was not fulfilled?—There were some minor changes on that contract, if I remember right, near Fort William, the object of which was to get a better line and better gradients with less work.

551. The contract was originally made for 45 miles of road from Fort William to Shebandowan?—I will explain that. When Contract No. 13 was first let it was intended, I believe, that we should get a line of railway from Fort William, touching at Lake Shebandowan, then onward to Sturgeon Falls and possibly to some point on the north side of the Lake of the Woods. At that time we also had in view to carry it to a point indicated by Mr. Dawson—I believe, the Narrows. We discovered, however, while we could get a line as far as Sturgeon Falls, that between there and the Lake of the Woods the country was excessively broken, and on this section it was impracticable, with any reasonable expenditure, to find a line for the railway. Hence, that portion of Contract 13, between a point called Sunshine Creek and Lake Shebandowan, was abandoned, and a line was selected to the north of Sunshine Creek.

552. In fact the first contract was let before you had practically ascertained what could be done along that line?—It was.

553. It was made prematurely?—I do not think so; I do not think it was made an hour too soon; it was made in the public interest.

554. You found you could not get through?—It was held by every one with whom I came in contact, and the opinion was held by myself, that, it was of the

greatest possible importance to have a portion of the line at either end placed under contract without delay.

555. I want to see whether the contract was prematurely made, because it is evident you made it upon information which afterwards proved to be incorrect?—There is nothing lost, however, by it; there is no work of any consequence done between Sunshine Creek and Shebandowan.

556. No work was done between those points?—There may have been a few acres of clearing.

By Mr. Mackenzie:—

557. I do not think there was?—I cannot say whether there was or not, but I am sure there was very little done.

558. You had reason to believe at the time, however, from Mr. Dawson's report, that we could get through to the Narrows?—Yes; I had strong hopes that we could get through. I could not "believe," because it was not a matter of opinion at all; it was a matter of fact we were dealing with. I had the strongest possible hope that we would get through.

By the Chairman.

559. There had been no line run through; you took Mr. Dawson's opinion?—I took Mr. Dawson's opinion.

By Mr. Mackenzie.

560. That was west of Sturgeon Falls; but you had an Engineer over the country east of Sturgeon Falls?—Yes; about that time we had a survey made from Shebandowan to Sturgeon Falls; I am not sure whether it was prior to the letting of that contract or afterwards.

By the Chairman:—

561. You will ascertain that?—I can ascertain that; it was about that time, but most likely before.

562. Then the last contract, Contract No. 25, extends from Sunshine Creek to English River?—Contract 25 is a peculiar one; the grading extends from Sunshine Creek to English River, but the track-laying and ballasting extends the whole way from Fort William to English River.

563. It is not a peculiar contract because Contract 15 is the same?—Up to that time it was peculiar because a contract of that character had not previously been let.

564. It is 115 or 116 miles, I think, from Sunshine Creek to English River?—The distance from Fort William to Sunshine Creek is about 33 miles; English River is about 80 miles further on.

565. How far is Port Savanne from English River?—About 43 miles.

566. Under the plan proposed by the late Government to utilize the route from Port Savanne by way of Rainy Lake, Fort Frances Locks, Rainy River and the Lake of the Woods, to Keewatin, the extension from Port Savanne to English River would be practically useless until the whole line from Fort William to Selkirk was made?—It would not be useless by any means; it forms a portion of the Trunk Line.

567. But it runs from Port Savanne into the wilderness—It would not be any use in connection with water navigation? Not until connection was made between Keewatin and English River.

568. I am speaking now upon the hypothesis that the water route was to be adopted as part of the system from Port Savanne?—Of course, if you follow the water from Port Savanne to Rainy Lake and thence to the Lake of the Woods, the line to English River could not be used; but it would not be useless ultimately because it is a portion of the Trunk Line.

569. There would be no business over it?—No business whatever until the line is finished through.

570. It was not intended for several years to connect the line running from Fort William westward, with that running from Selkirk eastward?—I cannot say that; I do not know what the intentions of the Government of the day were. I can only judge from what I saw and heard. They must have intended to extend it when tenders were invited.

571. Was it not the declared intention of the Government, as expressed from time to time, not to build that central link. I do not speak of when such was their intention, but during the period of the construction of the road from Fort William west, was it not the intention of the Government not to build the intermediate link between Keewatin and the terminus of the road at this end?—I cannot say that. The Government authorised me to prepare papers for letting contracts between English River and Keewatin, and tenders were invited. Tenders have been received, and the contract is let.

572. When did the Government instruct you to prepare tenders for that portion of the line?—A year ago.

573. When was the contract let?—The contract for section 25 was let in 1876. The date of completion to Port Savanne was fixed at 1st August, 1877.

574. I understood you to say that it was the policy of the late Government to utilize the route from Port Savanne, round by Rainy Lake, Fort Frances, Rainy River and Lake of the Woods, to Keewatin, and not, at all events for some time to come, to build the central line?—I did not say that. I have no doubt the intention was to do both. I know it was the intention of the Government to build the line, or tenders would not have been invited.

By Mr. Mackenzie :—

575. You are also aware that when Contract 13 was let, we fully expected, as you have already stated, to reach Sturgeon Falls, for the express purpose of using the water?—A good deal was said about it at that time. Some clause was put in the contract obliging the contractors to push on the work to Port Savanne within a limited period. I remember that quite well.

By the Chairman :—

576. What I want to ascertain is, why the extension from Port Savanne to English River was to be built when it runs into a wilderness?—I can only account for it in this way: as a portion of the ultimate trunk line.

577. It would be, so far as any connection with water communication is concerned, practically useless until the central line was built?—Clearly.

578. How much would be the probable cost of the extension from Port Savanne westward?—The distance is 40 miles which multiplied by say \$30,000 for a full equipment of rolling stock and everything would give \$1,200,000.

By Mr. Mackenzie :—

579. You quite understood, from your consultations with me, that we had the line surveyed on the most direct route to reach Keewatin?—Certainly.

580. And that if the cost could be afforded by the country, we wanted to build the line as soon as it could be built?—That was always my impression, that such was the intention of yourself as representing the Government.

581. You recollect, of course, that we had various discussions upon that point?—Yes.

582. And while I proposed to use the water wherever it could be utilized, that not one mile of railroad was ever built, except to serve a through line purpose; you are aware of that?—There was a desire, frequently expressed, to utilize the water as far as it could be done; at the same time whatever money was expended it was on works that would form part of a through line.

583. A short line was really obtained?—The shortest and best line was obtained.

By the Chairman :—

584. Admitting that the shortest and best line was obtained, was it ever in your opinion desirable in view of utilizing the water, and with that object extending the line 42 miles further?—Yes, I think so. If I may be allowed to say so, I think it was advisable to extend it still further.

585. As it was not extended further, at all events not for some time, was it desirable to build the road to English River?—I think it would have been better if 50 or 60 miles further had been put under contract a year ago.

586. Do you think, if it was intended to diverge from Port Savanne and there was no means of communication through by the road you were building, that it was

desirable to push that road 42 miles further and leave it in the wilderness?—I am very clearly of opinion that there was not a mile too many built. The country is a very peculiar one; it is a region where operations can only be conducted from the two ends. Every yard of earth turned at either of the two ends brings you so much nearer the completion of the whole work. It is impossible to do the intermediate portion by any other way than from both ends.

587. Is it desirable to have a road running into a wilderness and remaining unoperated?—It is impossible to shake me on that point. I have always held that it is most desirable to have the line built from both ends as rapidly as possible.

588. But the policy of the late Government was not to finish that link for some time?—That may have been so. I had nothing to do with that.

589. Did you recommend the extension to English River?—I did. I recommended going 50 miles further, but my recommendation was not adopted.

590. Your recommendation to go 50 miles further was not adopted?—Probably it was 60 miles further it was to a place called Wabigan River.

591. Would you have recommended the extension of the line to English River if you could not have extended it further at that time?—English River is not an objective point by any means.

592. But would you have recommended the extension to English River if you could not have gone further for several years?—Certainly, I would; but there was no necessity for waiting several years.

593. Have you gone over the present line from Fort William to Selkirk?—I have not.

594. Have you personally examined the route decided upon westward? Fort George is the objective point, is it not?—I have gone across the continent, not, however, on much of the line, not absolutely on any of it.

595. In the same connection, are you aware whether the telegraph lines are exactly upon the selected route for the railway?—They are intended to be on the exact route.

596. Are they. There are over two points where they are a mile or two off?—They are practically on the route of the railway, although they may not be on the exact line.

597. On the line from Fort William to Selkirk are the telegraph lines on the line of railway as built?—I am informed they are. They may not be on the exact line of the railway in every instance, because since the telegraph was put up we have made one or two minor improvements, moving the clearing some few yards perhaps to one side or the other, and we are still doing that. We have not finished the improvements.

By Mr. Haggart:—

598. Is a telegraph line built in connection with the railway in British Columbia?—There is a telegraph system in British Columbia, but it was there long ago.

599. It is not part of the Pacific Railway system?—No; it was built before British Columbia came into the Union.

600. Is there no portion of the Pacific Railway telegraph line built in British Columbia?—There are 80 miles of telegraph built from the neighborhood of Cache Creek to a point on this side of Kamloops.

601. Is that on the line of railway?—It is on the route of the Pacific Railway which the Government adopted last year.

602. Are you still determined to build the railway on that route?—It does not lie with me.

By the Chairman:—

603. Do you know anything personally of the way in which the telegraph contracts have been fulfilled?—I know nothing about that matter.

604. As to those lines of telegraph, have they been properly built?—In some cases they have not been satisfactorily built.

605. Have they been paid for according to contract?—They have been paid for if the work has been satisfactorily done; if the work has not been satisfactorily performed, they have not been paid for.

606. You are aware of that?—Yes, because I have had to deal with them.

607. What parts of the line had not been satisfactorily done?—A contract with Mr. Fuller, for the construction of the telegraph line to Edmonton, came before me not long ago. I found, on enquiry, that it had not been built quite satisfactorily, and a certain portion of the contract money was kept back in consequence.

608. Do you consider the line from Fort William to Selkirk has been satisfactorily built?—That has come under my notice lately.

609. Has the contract been completed?—That I cannot say. I am informed it has not been completed, and, of course, has not been paid for.

610. How far is it completed and how far not completed?—I will enquire.

611. Are you aware there has been an excess in the cost of each of the four Contracts, 13, 14, 25 and 15?—In what respect?

612. That the amount of work done was largely in excess of the amount of work ordered for?—I am not aware of it in those instances. I am aware that the work done on Sections 25 and 13 is largely in excess of the total amount mentioned in the tenders.

613. In fact every one of them is very largely in excess of the original estimate. No. 13 being only partially completed, of course, you cannot compare that?—No. 13 is the only one completed. I find a final certificate has been issued in favor of the contractors.

614. Contract No. 13 was made for 45 miles, the aggregate being some \$400,000. As only 32 miles of it were done under that contract, it cannot be compared exactly with the original estimate. But on No. 25 a comparison can be made; the amount of the original bill was \$1,037,061; the work executed up to November 30th, 1878, was \$1,310,200; the work still to be done amounts to \$74,439, making an increase of about \$347,578?—I have no figures of that kind.

615. The figures are here as obtained from the office?—I have not seen these figures before. With reference to Section 13 being finished, you were right in one sense and I was right in another, because the contract, although originally for 45 miles, was subject to a reduction; as 15 miles were taken off.

616. You cannot compare the tenders with the work done, because the tender was for 45 miles and only 30 were done?—Yes.

617. Are you aware that there was the large increase I have referred to on Section 25?—I never saw these figures before, and I do not know whether the Return from which they are quoted is an official Return or not. But I can tell you the quantities executed are greatly in excess of the original quantities estimated.

618. Can you account for the very large excess?—I cannot account for it; it is incomprehensible to me. The discrepancy is very great. I have recommended a re-measurement of the entire work; the Minister has accepted my recommendation, and the re-measurement will be made.

619. You will observe that the earth excavation is a million yards at 33 cents on Contract 25; on Contract 13 the earth excavation was taken at 23 cents; that is one case of inconsistency; in this case 970,000 yards are added to the contract, or nearly 100 per cent., adding \$320,000 to the price of that item alone?—Contract 13 is quite another work.

620. Section 25 is an extension of the same road; and fifteen miles more were to have been given to the contractors on No. 13, if they had wanted it?—Which they declined.

621. But is not that a case in which the tenders are inconsistent; was not 33 cents a high price?—It may have been or it may not have been.

By Mr. Mackenzie:—

622. I fancy Section 13 is one the price on which was low?—I imagine if this had been a sufficiently paying price they would have executed the fifteen miles, but they declined.

By the Chairman:—

623. This work, you say, is to be remeasured?—Yes.

624. I observe in this Contract No. 25 that there are 180,000 cubic yards of ballasting put in at 38 cents; there seems to have been 198,000 yards done, and there are still 100,000 yards to be done. I suppose that the amount of ballasting to be done ought to be pretty definitely ascertained?—I don't understand these increases, and I have told the contractors and everybody that the work must be remeasured.

625. Upon such results are you still satisfied that it is safe to give out contracts on the present plan?—I do not know any better way.

626. As to inconsistent bids: You may get under this system a tender which is lower, apparently, than another tender, but which in reality is not lower. If you find there are inconsistent bids in a tender—high for some things and low for others—would you consider it safe to accept it?—If we had not to deal with the public, my idea would be to cast such tenders out altogether; but these things have to be brought up before Committees and examined into and great fault would be found.

627. But you could justify yourself?—The system is to accept the lowest tender, whatever the nature of it is.

628. But, practically, is it the lowest tender?—In these cases it has proved to be the lowest tender; we have had the increased quantities moneyed out at the rates on the half-dozen lowest tenders, and we still found the relative positions of the tenders remaining the same.

629. Are you prepared to state that in regard to Contract 15?—I am.

630. Did you recommend the awarding of the contracts?—I do not remember; if I did it will be on record in the Department.

631. Do you really consider that under the system upon which they were let there was any certainty that what appeared to be the lowest tender, would in the end prove to be the lowest?—There might not be a mathematical certainty; but there was a reasonable probability that it would, and the result has proved that; notwithstanding the increase in quantities the tenders accepted are still relatively the lowest.

632. Is that the case in regard to Contract 25?—It is.

633. With a million yards of increase on the earth at 33 cents, and double the ballasting at 38 cents?—Yes.

634. And still it is the lowest tender?—Yes; unless the figures laid before me are entirely wrong.

635. Even admitting that there is no qualification for the enormous increase in the work?—I said before it is incomprehensible to me that the increase should be so great.

636. The Engineer in charge understands the bill of works upon which the contract is let I suppose?—It is printed.

637. Is not it his duty, if he finds there are large excesses going on, to report the fact to the Department?—Most undoubtedly.

638. Has he done that?—I really cannot say; I would not like to say he has not; I have been out of the office a good deal, but Mr. Smellie has been there all the time and can inform you.

By Mr. Haggart.

639. Perhaps you did not quite understand Mr. Plumb's question; the point he wanted to get at was this: by a comparison of the work actually done, and its cost, with the same quantities of work at the prices on the different tenders sent in at the commencement, and leaving out those portions that are not done, you say that Whitehead's would be the lowest contract?—Yes, clearly.

640. Have you made a comparative statement?—Yes; it will be produced.

641. Mr. Mackenzie said the other day one of the reasons for neglecting your recommendation was that upon examination he found that Whitehead's contract would be some \$70,000 higher than some others?—Miscalculations may have been made; but according to the calculations I believe to be correct, it is just as I say.

642. Have you made the calculations?—The calculations have been made, though not by me.

By the Chairman :—

643. Do you know anything of the several bills of works made up for Section 15; there were three, I believe?—I have a recollection of them.

644. Do you know the history of them?—It is a long story, covering a period of two years; is it necessary to relate it?

645. We find there have been three different bills of works; and we want to get at the reason why the quantities were varied from time to time?—I can give it to you in one paragraph. There was a reception of tenders in March, 1875; these tenders were for completing the grading and bridging only; nothing more; not track-laying or ballasting. There was another reception of tenders on 27th May 1876; these tenders were for through cutting only, and some tunnels for carrying streams through. The embankments were not intended to be done, and no trestle-work was intended to be done in these tenders. I may as well explain the reason for this, as it may seem curious. It was done on my recommendation. I was aware that the work was heavy and the rock was tough and difficult of access. I felt it would take a long time to do, and if we put up the trestle-work it would be almost rotten before it could be used, before the rock in this section could be ready and before the contiguous sections could be prepared; and the Minister on my recommendation received tenders for doing the through cutting only without putting up the trestle-work. Then, in September, 1876, other tenders were received; these fresh tenders were for the rock cutting, and, as before, the stream tunnels, with the addition of trestle-work, and the ballasting and track-laying all the way through to Keewatin.

646. That was the third tender?—Yes; and one was accepted—that of Sutton, Thompson & Whitehead; originally Sutton & Thompson, but Whitehead's name was added to it.

647. Upon what principle was the third bill of works made up; it contained precisely the objectionable features you have spoken of—the trestle-work and the timber? I am afraid I cannot explain that, I was not in Canada when these tenders were invited and received; I could theorize, but that is all I could do.

648. Mr. Whitehead became the associate of Sutton & Thompson, and is now, I believe, the sole contractor?—The work is done practically by him, though the contract is not in his name.

649. In the month of November, just before the contract was awarded to Mr. Whitehead, a very earnest letter to Mr. Mackenzie, recommending him strongly to give the contract to Sutton & Thompson, although there were lower competitors; are you aware of that?—I have tried to wade through the whole history of the "letting", but I have not succeeded.

650. Very soon after Mr. Whitehead went on to the work he wrote a letter to Mr. Rowan recommending certain changes in the system of building that part of the road; did that matter come before you?—I remember that; that is not pre-historic.

651. Then, upon the strength of that Mr. Rowan recommended strongly that the plan of construction of Section 15 should be altered?—Yes.

By Mr. Haggart :

652. I think that Mr. Whitehead wrote a letter directly to the Department?—I think you are right; Mr. Whitehead was in Ottawa; it was an old letter when I saw it; Mr. Whitehead was in Ottawa when I reported on it; it lay without any action being taken upon it from some time in November until 22nd May.

By the Chairman :—

653. The letter of Mr. Whitehead was dated Winnipeg November 6th, 1877, and addressed to Mr. Rowan; do you know when it came to light?—I do not; all I know about it is that it came under my eye on the forenoon of 22nd May, 1878.

654. And Mr. Whitehead was here at the time?—He was in Ottawa.

655. And Mr. Rowan was here?—Mr. Rowan was here too.

656. On 22nd May Mr. Rowan addressed you a letter making a calculation in regard to the change in the work, and recommending it?—Yes.

657. You state that Mr. Whitehead addressed his letter to Mr. Rowan, and you, believing it would be sound economy to accept Mr. Whitehead's offer, recommended its acceptance?—Yes.

658. Your recommendation, I suppose, was made on Mr. Rowan's memorandum?—Certainly.

659. Had there been any previous conversation between you and the Government in respect of that contract?—I do not, at this moment, remember; there may, and there may not have been; everything was done then in a very great hurry, as it is to-day.

660. When you made this recommendation were you aware of the particulars of Whitehead's contract—of the quantities in the schedule?—I think I must have been aware of them. I will tell you what I did: I read Mr. Rowan's letter, in which he had certain calculations which seemed to me to be somewhat theoretical. I picked out what, to my mind, appeared to be the essence of his letter, fastened on that point, and represented it to the Minister.

661. If you look at Contract 15, you will find that it called for 300,000 yards of solid rock at \$2.75; 30,000 yards of loose rock at \$1.75, and for 80,000 of earth excavation at 37 cts.?—Yes.

662. The earth excavation was a trifling item in that schedule of quantities, because it only amounted to about \$29,000; but there was a very large bill for timber, amounting to some \$340,000 or \$350,000?—Yes.

663. Mr. Whitehead says, in his letter to Mr. Rowan, that it is impossible to get that timber; the change in the contract involved enormous increases in the rock and earth?—Certainly.

664. And the contract of Mr. Whitehead was brought down to a low price by the small quantity of earth; did you take into consideration, at the time you recommended this, what would be the effect of increasing the rock and earth upon his contract?—I refer to it in my letter; I state that the total cost would appear to be \$260,000 more than it would be if the trestle-work plan was carried out.

665. Are you aware what the result has really been?—The result is not attained yet; we don't know how much it will cost.

666. But there is an estimate made, here in the office, of the probable cost?—It is not my estimate.

667. How are these estimates prepared, and brought before the Committee; who is responsible for them?—The party who brings them.

668. They came from the office; who would be responsible?—The parties who put their names to them; I decline to recognize them because they are not attested.

669. Then we must endeavor to get them attested?—Pardon me; I don't wish to be understood as saying anything in an offensive manner; but I could scarcely be expected to accept as correct papers which I have never seen before, papers upon which there is no name and nothing, whatever, to satisfy me that they are correct. I do not say they are inaccurate, but I cannot say they are accurate.

670. If a tender was based upon certain quantities of rock, earth and timber, the prices for the rock and earth being high, and that for the timber, low; and if a change was proposed by which the timber, which was low, was not to be used, and the rock and earth which were high were to be increased; ought not that to have been taken into consideration in making the change?—I have no doubt that it was considered.

671. But there was no alteration made in the price?—There was a proposition made by Mr. Whitehead to do a certain thing; that was recommended to be done by me, and I was justified in making the recommendation. I am only responsible for my recommendation.

By Mr. Haggart:—

672. You say you did not see the letter of Mr. Rowan until the day you made your recommendation?—I do not think I did.

673. That was on 22nd May?—Yes.

674. And you left for the Old Country the following day?—The following day.

675. At that time did you give any instructions to the Engineer in charge of the work, to carry out the alteration?—I am not aware that I did; I may have said to him, on my return from the Minister's room, that the Minister favored the idea, but I am not even positive as to that.

676. Let me put a leading question to you; did you write that letter after conversation with the Minister, or on your own suggestion; are those letters the result of conversations beforehand, or do you write them of your own notion?—Frequently they are the result of conversation with the Minister; but not invariably.

677. What is your opinion regarding this letter?—I think it is not improbable that I had seen the Minister before reducing my views to writing.

678. Was there any intention of changing the work, or any idea of it being changed before 22nd May?—I heard of none.

679. Because you remember the evidence you, Mr. Mackenzie and Mr. Smith, gave before the Public Accounts Committee last year, you all said there was no radical change in the work, and that there was none intended?—I do not remember that, but the evidence will speak for itself.

680. At that time it was generally reported that there was a change in the character of the work, and upon that report I had the investigation before the Committee, when, to my astonishment, I found there was no change intended?—The evidence will speak as to that.

By the Chairman:—

681. Assuming for the time that these returns are correct. I find in the original contract Sutton & Thompson estimate for 300,000 yards of rock at \$2.75; 30,000 yards of loose rock at \$1.75; 80,000 yards of earth excavation at 37 cents, and about \$340,000 worth of timber. Mr. Whitehead, in his letter to Mr. Rowan, says that the lumber cannot be furnished, and that it is impossible to get at it?—Yes.

682. Did you ever examine whether the timber he proposed to furnish was at a lower or higher price than usual?—The timber is very low.

683. And, of course, the price of the timber being low, brought his contract down to the price it was?—It no doubt affected the tender very much.

684. Do you consider the price for the rock low?—The price for the rock is rather high.

685. Both the loose and the solid?—Yes.

686. Is the price for earth high.—It is a good price for earth.

687. I observe that in No. 14, the next section, the price of earth is 26 cents?—Yes.

688. As a matter of fact Mr. Whitehead laid the track on Section 14, and could get access to the other section by that means?—Yes.

689. So that he was not in the wilderness where he could not get supplies?—It is a pretty rough country.

690. He had the advantage of the railway because it was under his own control?—When the contract was let to Sutton & Thompson there was no track laid.

691. But Whitehead had it in his power to lay it?—No doubt that was one element in his favor.

692. A. P. Macdonald & Co. based their tender on the hypothesis that 14 would be completed within a certain time, when the track would be laid and they could get at Section 15 across it; but they got no satisfaction from the Government and were compelled to withdraw their tender, which was \$100,000 less than that accepted; in doing so they stated distinctly that they had offered to do the work, believing that 14 would be completed, at 25 per cent. lower than they would have offered if they had not expected 14 to be completed?—The object of letting 14 before 15 was to make 15 more accessible. Contract 14 was let about two years before 15.

693. Were you here in October, 1876?—I do not think I was; I was here in January, 1877, though.

694. I merely want to ask you whether you know Mr. A. P. Macdonald and Mr. Kean, who tendered lower than Sutton & Thompson and lower than Martin and Charlton, to be responsible persons?—I know Mr. A. P. Macdonald; I am not aware of the reason why the contract was not given to them.

695. They wrote to Mr. Mackenzie to say that they understood in making out the tenders there would be an early completion of Section 14. They also say they have information that there is an extension of time granted, and that it will be two years before that section can be made available for carrying in their supplies; they say all this means a reduction of 25 per cent. to them on their contract, and they ask Mr. Mackenzie whether the Government will make good the difference between bringing men and supplies for Section 15 by the most available route, and by Section 14 if completed; Mr. Braun, in reply, says the Government cannot consent to any modification of the conditions, and wishes to know whether they will sign the contract or not. Now, as Chief Engineer, do you not think it would have been desirable to have endeavored to come to some understanding with Mr. Macdonald or any responsible people who made the lowest tender?—I was not here, and I am not prepared to say that such an effort was not made.

696. It is evident it was not made because the correspondence brought down on the subject does not show that it was?—There may be other letters, but you are enquiring into a matter I do not understand.

697. You say the prices on Whitehead's contract are high?—Some are; but the trestle-work is not.

By Mr. Oliver:

698. Can you tell the cost of earthwork on the recently-let contracts?—The contracts recently let are 41 and 42.

699. What is the price on both?—No. 41 is a contract for a section between English River and Eagle River; the price for earthwork on that is, I think, 25 cents.

700. And the other?—The price for earthwork on 42 (which is called B,) from Eagle River to Keewatin, is 31 cents.

SANDFORD FLEMING.

THURSDAY, May 1, 1879.

Sub Committee met—Mr. PLUMB in the Chair.

Mr. SANDFORD FLEMING called and further examined.

By the Chairman:—

701. The statements referred to yesterday are now certified to by Mr. Braun?—That is, as they should be.

702. Now, we were talking of Section 15; were you aware when the proposed change came under your notice that Mr. Whitehead had said it was impossible for him to supply the timber?—I knew what was expressed in his letter, and I think that was. I had very little intercourse with him on the subject; I think he was in Ottawa at the time, and he repeated what he said in the letter.

703. Would it have been possible, under these circumstances, in changing the plans, to have modified his contract?—Of course, the contract might have been cancelled and the work re let; contracts generally have a clause in them to admit of that.

704. But in the case of an important change like this, it was not necessary to adhere to the original prices?—It is a difficult thing to make a private arrangement as to prices with a contractor, and it is not usually done.

705. But there was an arrangement with him to change the whole character of the work; and it would not be more difficult to change the price than to change the character of the work?—There was a proposition by him recommended by the District Engineer and myself.

706. There was a proposal which increased the character of the work at high prices, and released him from an important part of the work?—Increased the quantity and not the character.

707. In the original contract there was a large quantity of timber at low prices, and a small quantity of earth at a high price, and the proposal would have relieved him from the timber and given him a larger quantity of earth-work at a high price?—That would be the effect, no doubt.

708. And that must have been apparent, even by your own statement?—It was perfectly apparent to me when I made the recommendation; yet I felt justified in making it; I thought it was in the public interest to do so.

709. Of course, you did that upon Mr. Rowan's statement of the increased cost, not supposing there would be such an enormous increase as there appears to be?—Yes.

710. If you had supposed there would have been such an increase you might not have recommended it?—I am not to this moment aware that the great increase in quantities is due solely to the change from trestle-work to embankments. I fancy it is due to some other cause; what it is I am not at this moment prepared to say.

711. The estimate of quantities upon which the contract was taken puts down the earth at 80,000 yards; is it possible that so enormous a discrepancy as between 80,000 yards and 1,650,000 yards, which is the estimate now to complete the work, could have occurred, and not be due to the change in the plan of construction?—Mr. Rowan informs me that no change has been made, and that it is still competent for the Government to put up trestle-work. I have given no orders to Mr. Rowan, and Mr. Rowan has given no orders to the contractor, to make the change; and the contractor says he has received no orders.

712. And yet he has made the change?—This is, of course, second-hand information; the parties can speak for themselves.

713. Of course, it is absolutely necessary that the Committee should endeavor to ascertain, as far as possible, how it happens that this enormous difference has taken place?—I confess to you that I thought the change was made; when I returned from England in October, I thought the change had been authorized, and was being carried out; there is no doubt about that; but I find it is not authorized and am told it is not being carried out.

By Mr. Oliver :—

714. You have found that there has been no authority given to change the works?—There has been no authority given to the Chief Engineer to make the change; the Chief Engineer is the chief Executive Officer of the Government, and if there was any authority to be given, it should and would be conveyed through him to others.

715. I suppose it is the duty of the contractor to carry out the agreement he has entered into until he is properly notified that a change has taken place?—It is not only his duty, but he is obliged to do it.

By Mr. Bergin :—

716. If a resident or District Engineer instructed him that he was at liberty to make the change, he would be perfectly justified?—He would naturally assume that the resident engineer had received proper instructions to convey to him.

By the Chairman :—

717. Did you have some conversation with the Government before you wrote that letter of 22nd May?—I think it is very likely that I ascertained verbally from the Minister whether he favored the idea or not; that is commonly done.

By Mr. Oliver :—

718. Do you remember any conversation?—I do not remember any conversation.

By the Chairman :—

719. Mr. Rowan was here in communication with you at that time?—Yes; the matter occupied a very short time; there was a great deal of business being done on that day and this is one of the things taken up.

720. Was there any prior conversation between you and Mr. Rowan on the subject?—I think he mentioned a few days before that among many subjects he wanted to discuss, with me, this one.

721. This was one of the most important matters in connection with the contract?—I don't know that; at all events I took the most pressing matters up first, and this was one of those which were put off till the last day.

722. Did you give Mr. Rowan any instructions or any opinion that would induce him to make the change?—I do not remember giving him any. He is here to-day; I have seen him, but I have had only a few minutes to speak to him.

By Mr. Bergin :

723. Would Mr. Rowan naturally conclude from your report, his report and Mr. Whitehead's application that the alterations would be made?—I think he naturally would.

724. Do you think that would be sufficient authority for him?—Not sufficient authority, but I think he would conclude that the change would be made.

By the Chairman :—

725. Are you aware whether Mr. Rowan went back?—Yes; Mr. Rowan went back.

726. Mr. Whitehead was here about the time?—Mr. Whitehead was in Ottawa at the time. I think Mr. Whitehead would naturally understand that the change would be effected.

727. Yet you say the change has not been effected?—It has not been authorized. I am informed it is still open to the Government to put up trestle-work,—that the work has not gone too far.

728. Mr. Whitehead's contract for the whole work was \$1,592,000; he has very nearly exhausted that on work reported, and there is a large estimate for future work?—Yes.

By Mr. Bergin :—

729. In endeavoring to ascertain upon whose authority that change was made, we have been met with the difficulty that Mr. Mackenzie, the political Minister reported adversely to your report on 12th June. That report was discussed several times in Council and Mr. Mackenzie, as political Minister, did not feel that he was called upon officially to instruct the resident engineer, Mr. Rowan. As the matter was undecided when you left, what course did you expect would have been taken under the circumstances by the head of the Department?—I would expect that in due course of time, in a few days or weeks, an Order in Council would be passed authorizing the change; that a copy of the Order in Council would be communicated to the Chief Engineer, and upon that he would take action.

730. As no such Order in Council was passed, and as no communication, either verbal or official, by letter, was made to the acting Chief Engineer, was the District Engineer warranted, further than it was implied in your letter to him, in instructing the change to be made?—I never instructed him.

731. You reported on his report?—I gave him no instructions; my report was addressed to the Department for it to consider.

732. You have already said he would naturally suppose that change was authorized, from his report to you, and your report to the Minister and conversation he had with you before you left for England?—Yes; that the change would be authorized.

733. What I wish to ascertain is this, that not having had any instructions to the contrary from the Department, under the circumstances you mention, with respect to the Order in Council, Mr. Rowan would not suppose that any change in opposition to his suggestion or report had been made?—He had no authority whatever; he dare not make any change without authority. I have no power to make any change, and if I have not, he has not.

734. Mr. Mackenzie says in his evidence: "It was not my duty to communicate to every one in the Public Works Department what we had been considering, and it was not my duty to communicate to any officer a negative decision. It was

my duty if we made any change to communicate the change, which would be done in the regular way; but we made no change, and we had nothing to communicate." What is your opinion in regard to that matter?—That is the custom with the Department, and it is perfectly correct. Nothing can be done, in theory, on any of these contracts without the knowledge and sanction of the Minister. It may be necessary and expedient in the public interest, sometimes to do portions of work not provided for, which may not cost a great deal of money, but at the earliest possible date after it is done, if it be expedient to do it, it is necessary to report to the Government the facts and obtain the sanction of the Department.

735. That being so in theory, how is it in practice?—In practice that is carried out as far as possible; so far as I can do it, it is done.

736. Where the change was so important as this and involved so much of the public money, would it not have been better to have opened the works again to tender?—I did not think it would. Of course, that could have been done; it was a proper subject for consideration.

737. Under the circumstances, do you not think that such an important suggestion as that made by Mr. Rowan should have had an official reply of some kind from the head of the Department?—It is difficult to give official replies to every letter sent. It is not the custom to give official replies to all. I make many a recommendation that is never paid attention to officially. It may be considered, that is all. If it is not adopted, I hear nothing more about it.

738. There must be a great difference between your recommendations as Chief Engineer at Headquarters and a District Engineer reporting what he believes to be a very necessary and important change to you?—His report had been lying in the office for months, if I remember rightly, before it came under my notice.

By the Chairman:—

739. Mr. Rowan's letter regarding the proposed change, bears the same date as your recommendation?—It may be the same date. I required him to put his views in writing in brief. I think the proposition was lying before the officer acting in my place a long time before that; six months before.

By Mr. Bergin:—

740. Whitehead's letter is dated Winnipeg, November 6th, 1877; your report is dated 22nd May, 1878, and so is Mr. Rowan's?—I was called upon to take action on Whitehead's letter; Mr. Rowan advised me that it was a matter of great importance; that it was absolutely necessary that it should be acted upon before I left for England, and that the matter had been before my Deputy, who had done nothing.

741. Who was your Deputy?—Mr. Marcus Smith.

742. Was it this matter that had been before him?—That is my impression; but Mr. Rowan can confirm what I say, or set me right when he gives his evidence. I required Mr. Rowan to place his views in writing and make such estimates of the difference in cost as would enable me to report directly to the Government. He did so, and his report is dated the very day I wrote the letter.

743. The change recommended by Mr. Rowan involved how much?—Here is a report which I was called upon, a few days ago, to make, which may throw a little light on the matter (*See letter 29th April 1879 on page 64.*):

743a. I would like to know from you the estimated increase by Mr. Rowan, and the actual increase in the work done since that time under this contract?—I think the estimated difference in cost between carrying out the trestle-work system and the embankment system was about \$20,000; as far as my memory serves me.

744. And what has the cost actually been?—It has not been done; the work has not been carried out yet.

745. Has there been an estimate made of the sum still necessary to carry out that suggestion?—There has been an estimate made.

746. Will you give it us?—The work certified as having been executed to the date of the last certificate is \$1,279,972, and the amount of the original quantities moneyed out at the prices in the contract comes to \$1,594,085.

747. What is the estimate to complete the work?—I cannot speak positively about that; there is an estimate before me, but I do not know anything about its accuracy.

748. I understood you to say just now that the change had not been carried out, and that it was still competent to go back to trestle-work?—So I am informed.

749. How do you account for the increase in cost, then, on that work?—So far there has been no increase, as far as the figures before me show.

750. Then how do you account for the difference between the bill of works and the amount of work done?—The bill of works is \$1,599,000, and the amount done is \$1,279,000, showing a balance for work still to be done.

751. Have you added to that the amount estimated as necessary to complete the work?—There is a difference in the character of the work; if you put in trestle-work in place of earth, the difference will not be so great.

By the Chairman:—

752. In the work already completed there is no timber used?—And there is no timber provided.

753. You say the work as done amounts to less than the original estimate, and that it is competent now to go on and use trestle-work. Suppose the timber were added to the amount the work on the contract has reached now?—Even then, the total cost would be more than the original estimate; there is a discrepancy, no doubt.

754. You say you gave no instructions to Mr. Rowan whatever; of course Mr. Rowan was aware you had made this recommendation?—Yes.

755. He was aware that the matter was under discussion before the Government?—Yes.

756. He and Mr. Whitehead were both here; and, of course, Mr. Whitehead had a deep interest in the change taking place?—Yes.

757. Are you aware that any communication took place between Mr. Whitehead and the Government?—Before my recommendation?

758. Yes?—No; I am not aware that any communication took place.

759. Or afterwards?—I do not know that there was any afterwards.

By Mr. Bergin:—

760. But you know Mr. Whitehead had been here in Ottawa in connection with this contract?—I saw him repeatedly in my own office.

761. Was this change mentioned before the Public Accounts Committee last year?—That I do not remember; I do not think it was recommended then.

By the Chairman:—

762. When you left Ottawa who came in charge?—Mr. Marcus Smith.

763. Did you leave any instructions with him?—No; I did not; he had all the documents in the office as I left them.

764. Mr. Mackenzie says that before Mr. Smith went west he conversed with him from to-day on matters connected with the whole work, to use his own words, exhaustively; but he never spoke to him about changes on Section 15; are you aware of that?—I am not aware of that.

765. Was it not an important topic?—He might have told him that the thing had been under consideration.

766. He says that he never mentioned the subject, and that he had no communication whatever on the subject?—I am not surprised at that; at the same time, I think it might have been mentioned.

767. Mr. Whitehead was here?—Mr. Whitehead had left two months before the date you mention.

768. But he had been here; Mr. Rowan and you had recommended the change; Mr. Smith took the work as your successor, to look after it in your absence. Would it not have been the ordinary practice to have conferred with him respecting this and any other contract?—If any instructions were necessary they should have been given.

769. Whether instructions were to be given or not, one would suppose it would be natural and reasonable to have said to Mr. Smith that you had made the recom-

mendation, and the Government had not accepted it?—All I can tell the Committee is this: There are many things that you intend to do that are not done—many important things escape notice sometimes.

770. There are four contracts, involving an expenditure of millions of dollars, and these were the most important works which the Minister could possibly have had in hand. This contract, No. 15, had been the subject of three lettings; it was the most tenable section, as it is called in one of the letters in regard to it, and was well known to be the most difficult one, and one involving most complicated questions. Does it not seem proper under such circumstances that some communication should have been made?—I am not here to defend Mr. Mackenzie or Mr. Smith. If I had been here I should have spoken to Mr. Smith on the subject.

By Mr. Bergin:—

771. You did not do so before you left for England?—I did not.

By the Chairman:—

772. When did you become aware there had been any change in construction?—When I went to England I recommended that the change should be made, as I have already stated. From the reception my recommendation received from the Minister I naturally assumed that the change would be made; and when I returned from England I also assumed that the change was made. I did not know that no change had been authorized until the other day I was being examined before a Committee of the Senate, when the late Secretary of State informed the Committee and informed myself that no such change had ever been authorized.

By Mr. Bergin:—

773. I think Mr. Mackenzie says in his testimony that he had given Mr. Fleming to understand he approved it—that such was his personal opinion?—That is quite correct; and it is quite likely I communicated his views both to Mr. Rowan and Mr. Whitehead.

774. Mr. Mackenzie says:

“Personally I felt entirely with Mr. Fleming in recommending this change as a mere engineering precaution that would take \$258,000. But then we had to consider, as a Government, the financial aspect of the matter. Our purpose originally, as I have often explained to Parliament, was to get into the prairie country as speedily as possible; to construct the road with what might be called temporary structures (that is the bridges and viaducts where required) so that they could be renewed with better material when we got the road built into the prairie country. After mature consideration, I came to the conclusion that it would be better not to make the changes, and on 12th June I sent the subject to Council, not recommending that the work be done, but simply sending a report with the documents for consideration.”

Under these circumstances, the Minister having made you aware that personally he approved of the recommendation, and you having gone to England under that impression, do you not think the resident engineer ought to have been informed that the Government had decided not to carry out your recommendation?—I do not think so; there was no necessity for it. As I said before, I frequently make recommendations which I hear nothing more about because no action is taken.

775. But the engineer in charge had from you the knowledge that you had made the recommendation?—I do not know that he had. I say it is very likely I told Mr. Rowan the Minister favored the recommendation; I do not know that I did, but it is more than likely that I did, and he will be able to tell you.

By the Chairman:—

776. You understand that the work is now in a condition where the trestle-work can be applied, and you can go back to the original contract?—Pardon me; I do not say that; I say I am informed; I am informed by Mr. Rowan, who will speak for himself.

777. Upon the calculation made the earth excavation has been increased already on work done from 80,000 yards to 224,000 yards, involving a large increase in cost. Rock work on work done has been increased from 300,000 yards, which was the

whole quantity to be done on the contract, to 342,000 yards. Of loose rock work there is already done 46,000 yards. These items make a difference of nearly 200,000 yards on the contract, and timber is still to be applied. On that estimate do you think it would be possible, if we went back to the old plan, to have the work done for the same cost as if the work had not been changed at all?—I think it would be exceedingly perplexing to the contractor, because he has purchased an immense amount of expensive plant.

778. He has assumed that the work will be changed?—Yes it seems to me he has assumed it will be changed.

779. It is hardly worth while, then, for the resident engineer to say that you could go back to trestle-work?—The work has been carried on of late as if an order had been made, and the contractor says he has obtained \$175,000 worth of plant to carry it out. I would regret very much if the change were not now carried out, for various reasons. We would not have such a good road, that is the chief reason. The embankments we would have to make at some other time.

780. Our examination has not been made with a view to consider the policy of permanent structures. Mr. Whitehead's contract was made on an entirely different plan; that plan has been in some way or other radically changed; that change involves enormous increases in the quantities upon which he obtained the contract, and some of the prices were high and some very low. If there was to be any change made, should not an application have been made to the Government. I think I will read the Committee this letter, because I have been called upon by the Department of Public Works to explain the matter, and probably, in a few words, there is here as good an explanation as I can offer. The letter is as follows:

CANADIAN PACIFIC RAILWAY,

OFFICE OF THE ENGINEER IN CHIEF,

OTTAWA, 29th April, 1879.

Sir,—I have received from the Secretary a letter informing me that, in the evidence recently given before a Committee of the Senate, a member of my staff, Mr. Marcus Smith, had said that important changes in the nature of the works on Section 15, which will very largely increase the cost of the section, have been made on my authority.

I am called upon to report the nature of such changes, if any, which have been made, and the causes which necessitated them.

I beg to state that repeated attempts had been made to place this section under contract between February, 1875, and December, 1876, and it was not until January, 1877, that a contract was entered into with Sutton, Thompson & Whitehead, for doing the work. The first certificate was issued on 17th March, 1877, for \$8,316. The work went on until May, 1878, when the certificates amounted to \$486,631.

On the 22nd of that month I made the following report to the Department:—

(For Report, see page 81.)

The day following the date of that report, viz., on the 23rd May, I left on leave of absence for England, and did not return until the end of October. I left Mr. Marcus Smith to act in my place during my absence, and on my return, being engaged with other matters, I allowed him to continue to attend to this section, and he has practically done so ever since, and he has certified for all the work that has been done. Since my return, the following certificates have been issued by Mr. Smith:—

21st November, 1878	\$ 480,757 77
12th December, 1878.....	1,070,835 03
14th January, 1879.....	1,139,802 81
13th February, 1879.....	1,217,462 81
11th March, 1879.....	1,279,972 86

The printed form of the certificate requires that the party signing it should give the authority on which the work has been executed, and Mr. Smith has in all these documents certified that the work has been executed by order of the Department of Public Works, and not by any order of mine.

As a matter of fact I have personally given no orders or instructions to make any changes in the character of the work which would largely increase, or in any way increase, the cost of the section. I have no power, and no one under me has any power, to give any such orders without the knowledge and authority of the Department.

It is perfectly true I recommended, on the 22nd May last year, that a certain change should be made, and that I expected, when I left for England, that the change would be authorized by the Department. Looking at the face of the certificates above cited, the only inference to be drawn is that Mr. Marcus Smith had received an order from the Department to make the change, or had satisfied himself that such an order existed.

Since my return to Canada, in October last, I have made only one report and recommendation respecting Section No. 15. The contractors applied for an advance of \$100,000 (on plant) to enable them to carry on the work. On that occasion Mr. Smith gave it as his opinion "that the Government would not only be perfectly safe in advancing the sum asked, but it would be both expedient and good policy to do so."

A copy of my report on that occasion is attached; on reference to it, it will be seen that I did recommend an advance, but not to the extent strongly advised by Mr. Smith. Instead of \$100,000, my recommendation was limited to \$40,000.

So far from ordering work to be done without authority, I have been extremely careful not to do so, and I have, as far as practicable, insisted that no work whatever should be undertaken that was not duly authorized. Mr. Smith has had full charge of the works. I have looked to him to see that everything was properly done, and that nothing was done without authority. He has certified that nothing has been done except by order of the Department of Public Works, and, accordingly, I conclude that there must be some mistake in the evidence referred to in the letter of the Secretary.

I have the honor to be, Sir,

Your obedient servant,

(Signed) SANDFORD FLEMING,

Engineer-in-Chief.

To the Honorable
The Minister of Public Works.

781. As a matter of fact, have you given any orders respecting any payments?
—As a matter of fact I have not; I have recommended an advance of \$40,000 on the plant, but I have signed no certificates; they have been signed by Mr. Smith.

782. Have you stopped paying upon that section, or have you given any orders with respect to payments?—I was a little astray in saying I gave no orders. I gave an order not to pay the last certificate for the month of March; the certificate was for \$70,000; I recommended the Minister to make an advance of \$50,000, instead of paying the whole amount, and that advance has been made.

783. And your intention is to enquire into this matter before going any further?
—Certainly.

By Mr. Bergin:—

784. To re-measure the work I suppose?—I was completely taken back when I discovered no change had been authorized; I was as surprised as any one could be, especially as I saw the work had been certified to from month to month as having been properly authorized.

By Mr. Haggart :—

785. It must have been known in the office, from the certificates that came in from month to month, that the change had been made?—By whom?

786: By the parties who signed the certificates?—I imagine so, though I do not know.

By the Chairman :—

787. We have reports here on several contracts, the original estimates on all of which have been exceeded; on No. 25 the increase in the cost is 32 per cent. on \$347,000, the original contract being \$1,037,061; on No. 14 the amount of the contract was \$402,950; the amount of work done is \$659,847, and there is yet to be done work to the extent of \$63,825; on No. 15 the estimated cost was \$1,544,085; the work done amounts to \$1,279,972, and there is yet to be done work which it is estimated will cost \$1,245,027, making an increase of \$939,915. How was this estimate of work to be done made up, and from whom would it come?—All I can say in explanation of that is this: all certificates for the payment of money on account of the work to which you have referred came under the notice of the gentleman who acted in my place during my absence; on the first occasion that it came under my notice that the quantities largely exceeded what were supposed to be the quantities, I ordered that payments should cease, and no payments have been made since.

788. What I want to know is this: there is an estimate of work still to be done; who made that up?—I do not know that I can tell you.

789. It comes here to us in the same way as other estimates?—I am afraid to accept estimates as being accurate because they are very often not very accurate; they are mere approximations, and sometimes engineers are driven to make an estimate when they have not really the data upon which to make it.

790. This estimate gives us the cost and expected cost of the works?—I did not bring it, sir, and I am not prepared to endorse it.

791. How shall we find out whether this estimate is in the Department, and where it came from?—There are many estimates in the Department; and even if it came from there, it may not be perfectly accurate.

792. It may be an approximate estimate, though?—I do not mean to charge any one with making an inaccurate estimate; whoever made it has probably done the best he could, using the data he had at hand to the best advantage; but when the data is insufficient you cannot have a perfect result.

By Mr. Haggart :—

793. When a paper comes over here from a Department; we have the authority of the Department that whatever is in it is correct, I should judge?—To give you a single illustration of how difficult it is to get accurate estimates, I may say that before these works were let, we made estimates—rough approximations—of the quantities on the work to be done, to give the contractors a general idea of the magnitude of the work they were to tender for. We knew we had not sufficient data to make them upon, but still we had to make them for that purpose, and it turns out that our estimates were imperfect, some of the quantities being too little and others may be too large.

794. I do not see any here that are too large; they are all too small?—Unfortunately, that is too much the case.

By the Chairman :—

795. You see the original bill of works is exceeded largely by the quantities as done; can you tell me whether you think the surveys of the railway are in a sufficiently forward state to warrant the Government in proceeding with the work upon that form of tender which you say cannot be adopted without an accurate knowledge of the quantities?—You are referring to the system of letting by lump sum and bill of works.

796. Yes; because in every case here we are misled, and the country, which has been taught to believe that the work was to be done at a certain price, will find that that price has been exceeded?—I never made any estimates of the cost of the work; I was a party to having published rough approximations of quantities before

the letting of the contracts for the special purpose which I shall read to you from the bill of works:—

“The quantities in this bill are furnished for the purpose of giving an approximate idea of the nature and magnitude of the contract, and to admit of a comparison of tenders.” That is what these estimates are for, and not to mislead the people as to the cost of the railway ultimately.

797. That being the case, is it safe to make contracts where there are, inconsistent prices in the tender; for instance, where quantities are estimated, tenderers may put in high prices for some kinds of work, and low prices for small quantities of work, as in this case?—I am not in favor of letting works to the lowest tenderers, or to putting in inconsistent tenders. You will find in all the recommendations I have made in writing and otherwise, that I have tried to find out a good respectable contractor,—the lowest good contractor, irrespective of the relative value of the tender.

798. If the system is such as to admit of the condition of things which seems to be evidenced in all the contracts we have before us, there ought to be some modification of it, because if you apply it to absolutely the lowest tender, you may give the work to the highest tender, in fact?—I do not think that is likely. I think the rule adopted for finding the relative value of tenders is not a bad one; I do not know any better way of getting at the relative value of tenders.

799. Was that system adopted by the Government on the Intercolonial Railway?—It was not; it would have been very much better if it had been adopted. I should like to enlighten you; but I regret I am unable to do so; but before next winter we will have the whole matter cleared up. At all events, no money will be paid on any of the contracts until the whole matter is cleared up; I am not going to recommend any payment.

800. Mr. Marcus Smith is practically acquainted with the work in that section of country?—Yes; he has been over it.

801. He had been over it before the change in line was recommended?—Yes; I think he was twice over No. 15.

802. Was he consulted in regard to Mr. Rowan's recommendation or his letter to you?—He was not.

803. You did not consult him?—No; for good reasons, which I need not at present explain:

By Mr. Haggart:—

804. Were no certificates issued from 22nd May till November?—There were.

805. Under whose authority were they paid or issued?—They were signed, subject to the approval of the Acting Chief Engineer, Mr. Marcus Smith, by Mr. Smellie.

806. You were away at the time?—I was in England.

807. The certificates signed by Mr. Smith are dated November 21st, December 12th, January 14th, February 13th and March 11th?—The last certificate covers all others signed before it.

808. The last certificate was signed after Mr. Smith says he obtained knowledge of the change in the work from the letter which was in the Department. The first time he knew of it was in September, after he went there; he obtained knowledge of the change in the work, and wrote down to the Department for the letter?—He says it was authorized by the Department. The question asked me by the Department of Public Works was what authority had I to change the work. I said I had no authority; that all the works had been carried on, as the documents, on their face showed, under the direct orders of the Department; and those certificates are brought forward to show that Mr. Smith thought so, too.

809. But Mr. Smith never signed a certificate till November, 1878?—Yes; he signed a great many before that.

810. Between May and November?—Not between May and November; he was not in Ottawa after July. There are certificates signed by the Engineer-in-Charge of the head office here.

811. Mr. Smith states that he was not aware of the existence of the letter for the change in the character of the work till September, when he got the information from

Mr. Rowan up at Winnipég, and he immediately sent down to Ottawa for the letter, and after that he signed certificates. He has not signed any between May and November?—I do not see the point.

812. What Mr. Smith says is, that he was unaware of any change in the character of the work till he went up there; that the first knowledge he had of the change was obtained from the resident Engineer, Mr. Rowan; that he asked for the order for the change in the work, and telegraphed to Ottawa and got your letter. Upon that letter, he understands, the change was made?—If he considers that order sufficient, he was perfectly justified in signing certificates, if that is an order.

813. I do not think that is an order?—Nor do I.

By the Chairman :—

814. As a matter of fact, the change was made immediately after Mr. Rowan went up?—I cannot say whether it was or not.

815. Can you not tell by the amounts of the certificates?—I cannot tell. There was a certain amount of work to be done, whether the change was made or not. The only work which would be done at that time was earth and rock work, and the returns would come in very much the same whether the change was made or not.

By Mr. Haggart :—

816. Before the Senate Committee you say you have personally given no orders or instructions to change the character of the work in any way that would increase the cost of the section; you say, "I have no power, nor has any one under me any power to give any such orders without the knowledge or authority of the Department." I just understood you to say that it was your impression that you had verbally given an order to Mr. Rowan?—I say this: I may have informed Mr. Rowan that the Minister, personally, favoured the idea of the change.

817. I suppose there is no doubt the Minister did favour the change?—There is no doubt.

818. Last time you were here you said you had prepared a statement showing what would be the position of the different tenders on section if they had been put in for the quantities as executed by Whitehead, and you said that Whitehead's would be the lowest; have you that statement with you?—I have the statement, which I will be very happy to submit. In submitting it, I may as well explain that this is an estimate prepared not by me, but at my request, as soon as I discovered there was such a discrepancy in the quantities, and I have no doubt that it is perfectly correct. I would also explain that, in Mr. Whitehead's letter, on which my recommendation of 22nd May is founded, he offered to do the earth work without charging anything for haul. We have no such offer from any of the other tenderers, and it would not be right not to make an allowance in each case for haul. I have added the allowance for haul in each case. Then, in reference to one of the tenders, one man puts clearing in at twenty cents per acre, which, in my judgment, is a clerical error. Clearing cannot be done for twenty cents an acre; I suppose he means \$20. I have taken the liberty of correcting that. With this explanation, I can inform you that the contracts now stand as follows: Sutton, Thompson & Whitehead, the lowest; J. A. Green, second lowest; Talbot & Jones, third; D. Hingston, fourth; A. Farewell, fifth.

By the Chairman :—

819. What has become of Macdonald and Kane's tender?—I do not know. Their tender was rejected.

820. But they could have taken the contract?—They coupled their tender with certain conditions which could not be complied with, and their offer was not taken up.

821. They state in their letter that the reason they could not go on with the contract was, they understood two years' further time had been given to the contractor on Section 14, and if that was the case they could not get their supplies in. They asked if any such arrangement had been made, and they were told, in reply, that they must sign the contract immediately. I think, therefore, this tender should be included in this comparison?—I have not done so, because I was informed that Sutton, Thompson and Whitehead were the lowest tenderers who were prepared to accept. There were some other tenderers, but they would not accept and enter into

the contract. It is not for me to argue the matter, however; I am simply giving evidence in reply to Mr. Haggart. The authorities may have done wrong in passing over Macdonald's tender, but that I am not prepared to say anything about. The large quantities to make the solid embankments have been moneyed out at the rates given in these five tenders, and the result is as follows:—

Sutton, Thompson and Whitehead.....	\$2,515,917
John A. Green.....	2,525,335
Talbot and Jones.....	2,734,377
D. Hingston.....	2,518,311
A. Farewell.	2,560,390

The relative positions of the tenders are slightly changed; for instance, D Hingston comes very nearly as low as Sutton, Thompson and Whitehead. But Sutton, Thompson and Whitehead are still the lowest.

By Mr. Haggart:—

822. That is making an allowance for haul all round?—Whitehead has no allowance for haul; he does the haul for nothing; if the others would do the haul for nothing, of course it would make a difference.

823. You know this offer of Whitehead's, on condition of a change in the work, to charge nothing for the extra haul, was a subsequent offer?—I know that.

824. Under precisely similar conditions of haul as Whitehead's, what position would the rest of the tenderers be in?—I have no doubt at all that if the work was up for contract to-day, the prices would be changed, and the work would be let for less money.

825. What I want to know is this: if the rest of the contractors had made the same conditions, in regard to haul, as Whitehead, what would be the relative positions?—I am not prepared to say what they would be.

By the Chairman:—

826. How much is added to the haul in each case?—Something like \$80,000.

827. At how much a yard?—The price for haul is put in the tender, it is a modified price. The price put in the specification is for a short haul, a haul to be performed by carts; this is for a haul of several miles, to be performed by train.

828. How much have you added in each case?—I have added \$82,000 to each one.

By Mr. Haggart:—

829. Taking away this amount of \$82,000 in each case would leave the rest of the tenderers all under Mr. Whitehead?—Of course it would.

830. That is very nearly the evidence of Mr. Mackenzie, who said that one of the reasons for rejecting the recommendation of your letter to Council was, that on a comparison of tenders, they found that some of them would be nearly \$70,000 lower than Whitehead's?—It would not make them all lower than Mr. Whitehead's, but some of them; I am not justified in making an estimate without adding what would have to be provided.

By the Chairman:—

831. But you are comparing Whitehead's contract under a modification with the other tenders?—I have explained how that was done.

832. I would like to have the two other contracts, A. P. Macdonald's and the other, moneyed out in the same way as the five you have spoken of?—That can be done.

SANDFORD FLEMING.

Mr. J. H. ROWAN, called and examined:

By Mr. Bergin:—

833. What position do you occupy on the Pacific Railway?—I am District Engineer for the Manitoba District of the Canadian Pacific Railway.

834. How far does your work extend?—It extends from Rat Portage to Livingstone on the main line, including the Pembina Branch.

835. When were you appointed District Engineer?—I cannot tell you the exact date, but I think it was early in 1875.

836. Before these contracts were let?—Oh yes; I had general charge of all the works between here and the Rocky Mountains up to the time that construction commenced; after construction commenced no one engineer could look after such an extent of country, and I was given my choice as to the portion of the line I would like to look after, and I selected the Manitoba District.

837. Did you prepare the estimates for Section 15?—Which estimates do you mean?

838. The estimates upon which the contracts were let—the bill of works?—No, Sir; I did not prepare the first estimates.

839. Did you make a survey of or locate that section?—No; I had engineers under my supervision.

840. Was it thoroughly located before the bill of works was prepared?—No.

841. Merely a preliminary survey?—A preliminary line.

842. Did you prepare the bill of works?—The last one I did.

843. Who prepared the two first bills?—I could not say; they were in Ottawa; I was in Manitoba.

844. Who prepared these estimates, do you know?—I do not; I was then engaged in looking after the surveys, and I forwarded what data we had collected in a rough state to Ottawa; it was merely a preliminary survey as well as I remember, with an approximate location on the plan, and an approximate profile of that location.

845. You have been a long time engaged as an Engineer upon railways?—Yes; twenty-seven years in Canada.

846. On what railways?—I was engaged on the Great Western Railway, the Grand Trunk and the Canadian Pacific Railway.

847. During their construction?—Yes, during their construction.

848. Were you engaged in any railway in any other country?—In Ireland, on the Midland and Great Western Railway and its branches.

849. On any of those works do you remember the letting of contracts involving large sums of money on mere preliminary surveys?—I was not on those works at the time that portion of the work was done.

850. Do you know whether it is customary to do that?—To do what?

851. To let contracts upon mere preliminary surveys on mere trial lines?—I do not know; it depends altogether upon the circumstances of the case; in this particular case there was great anxiety exhibited to push forward the work, and the contract was let at an early date before detailed information was acquired; there was not time, in fact, to get the information.

852. The whole thing, then, was guess work?—Not guess work; there was a certain amount of data, but it was not as full as it would have been if more time had been given.

853. Did the work as executed compare at all satisfactorily with the estimates as made before the contracts were let?—Which contracts are you referring to?

854. Those you are at 14 and 15?—Some of the quantities as executed are largely in excess of those originally estimated.

855. How do you account for that excess?—I account for it in several ways, one of which is, that the material which had to be removed was of such a character that it took a very much larger quantity of material to make up the banks to the height shown in the profile, and hence the quantities have been larger than we ever contemplated. A large amount of that material has, in addition, had to be wasted and thrown on one side, and not used at all in making the banks. The surveys were made when the country was covered with snow, and the ground was frozen solid and hard. A large portion of the country was covered with timber, and other portions of it with muskegs—open swamps. They were tried at the time the surveys were made;

and it was supposed, with the means the surveyors had for ascertaining the depth of the swamps, they would be four or five feet deep, or thereabouts.

856. Cannot you tell by the character of the timber, even when the snow is on the ground, where the muskegs are?—Certainly, we can tell the character of the country so far as to say: "This is a tamarac swamp;" but I have never in my engineering experience come across such swamps before. The swamps in that section vary from 5 to 26 feet in depth.

857. Did you make any attempt before those estimates were prepared, before you sent in those data to the Department, to ascertain the depths of all the swamps?—Certainly, we made all the effort we could with the means at our disposal; we had no tools, and no time to make a thorough examination.

858. What time did you go up there, in what year?—In 1871.

By Mr. Haggart:—

859. How many lines were run over that route?—Altogether?

860. Altogether?—Three lines.

861. What time did you first go up there in charge of the route?—I went up there in 1871 in charge of the surveys.

862. And when on construction?—On construction I went there, to the best of my recollection, in the latter part of June or early in July, 1875, as District Engineer in charge of construction; that was about the time we commenced constructing the work.

863. In what year?—In 1875; up to that time I had been engineer in charge of the surveys from Mattawa to Edmonton.

By the Chairman:—

864. In charge of the surveys on Section 14?—In charge of the surveys all over.

By Mr. Haggart:—

865. When was the contract let to Sutton & Thompson?—I really cannot tell you at this moment.

866. You say there was not time to ascertain the character of the country. No. 14 was to have been completed and finished before No. 15 was let, and you were there a year before the contract was let on Mr. Whitehead's section?—I was thinking you were speaking of No. 14.

867. No. 14 was let when?—In 1875.

868. It was to have been completed, under the conditions of the contract, before Mr. Whitehead's contract was let?—If my memory serves me right, it was to be completed on 1st August, 1876.

869. And when was Mr. Whitehead's contract let?—I think in the autumn of 1876.

By the Chairman:—

870. Was it not let on 1st January, 1877?—Somewhere about that time.

By Mr. Haggart:—

871. You were engaged in the construction of work of a similar character for nearly a year and a half before Mr. Whitehead's contract was let?—There is no similarity at all between the contracts, none whatever; they are as different as two contracts could possibly be.

872. That is in the character of the work?—Yes.

873. You say the surveys were done in the snow and you had not time to take them; and you have been there since 1871?

874. Your first visit was in 1871?—Yes.

875. Then you were there a year and a half before Mr. Whitehead's contract was let?—Yes.

876. Surely it was possible to take out in that time, if you had the means furnished you, accurate estimates of what the quantities would be on Section 15?—We were then making location surveys on Section 15 in order to obtain correct information on which to base the work.

877. Before the contract was let?—Yes.

878. Then you had made the location survey for Section 15 before the work was let?—It was the preliminary location survey. It was not the actual location survey, but a closer survey than a mere preliminary line run through the country.

879. What is the difference between a preliminary and actual location survey?—The actual location survey is made on the exact line on which the route is to be built; the preliminary location survey is as near as we can estimate it would probably come; it may not be exactly on the line as laid out for construction.

By Mr. Bergin :—

880. You say you made every attempt, it was in your power to make, to ascertain the character of the ground?—On Contract 14?

881. No, on Contract 15?—There was no trouble about the character of the ground on Section 15; there was rock and water. We had no difficulty in ascertaining that. When I said there was difficulty about the character of the ground on Section 14, what I wished to convey was the difficulty we had in arriving at anything like a correct estimate of the quantities of the work which would be required on that section, from the state of the ground at the time we made the preliminary surveys. I did not make any preliminary calculation of the quantities, but it is exceedingly probable, if I had made one, it would not have been what it ultimately proved, for I never imagined that the swamps were from six to twenty-six feet deep, of such soft material that you could run a pole through it.

By Mr. Oliver :—

882. What did you estimate the depth of the muskegs when you made the preliminary survey?—I estimated them at five or six feet in depth.

883. And in place of that, they turned out to be up to 26 feet deep?—19 and 26 feet deep; that is on Contract 14.

By the Chairman :—

884. But what are they on Contract 15?—There are none on 15.

By Mr. Haggart :—

885. I asked you about 15, and you said the character of the country was such that it was difficult to know what it really was?—There is no doubt about 15; it is unmistakeably rocky.

By Mr. Oliver :—

886. Rock and water?—Rock and water.

By Mr. Bergin :—

887. Why were you unable to make a proper estimate of No. 14; why had not you the tools?—We were not furnished with them; could not have carried them, and had not the time for using them. In those days it was as much as we could do to carry sufficient food for each man to keep us from starving, without loading ourselves with heavy boring tools.

By Mr. Haggart :—

888. On No. 15 there was no trouble like that; did you get the exact quantities on that section?—We did not originally.

889. Not before the contract was let?—No.

890. Then I misunderstand you altogether. I understood you to say that on No. 15 there was no trouble; it was all rock and water, and you knew exactly the quantities?—I know exactly the character of the material.

891. Then, knowing the character of the material, you could have had no trouble in taking out the quantities?—Certainly we had trouble.

892. What was the trouble?—The trouble was this: At the time the original quantities were taken out, a longitudinal section had been run over the line on which grade were laid down, and we took out the quantities from those grades.

893. I mean, independent of the change of grade, you had no difficulty in finding the quantity?—I am not referring to the change of grade; I mean this: the quantities are taken out from a line run longitudinally which shows certain parts as cuttings and certain parts as banks; but that is merely a line along the centre of the road. We had no cross sections from which to calculate the quantities.

894. Are there many side hills in that country?—It is all side hills; there are places in the contract, which on the original profile show bank; that are actually partly cuttings, and we have places too, which on the profile show cutting, which are bank; there is more bank than cuttings; that is to say, the centre line of the railway passes over a little knob of rock that appears on the profile as cutting, and the engineer would take out so many cubic yards for that knob shown on the profile; but the quantity might prove much larger when calculated from cross-sections.

895. Was the Department here made aware of the nature of the ground over which Contract 15 passed?—Yes.

896. From time to time?—Yes.

897. At the time the letting was made, you had not made such an examination of the grounds as was necessary to an accurate estimate of the character of the work?—No such examination had been made.

By Mr. Bergin:—

898. Did you advise the Department of that at the time?—Yes; I mean I advised my chief; I did not advise the Department.

899. Your chief, then, was aware of the nature of the ground?—Mr. Fleming was perfectly aware of the amount of information we had and what we had not.

By Mr. Haggart:—

900. Why did you not cross-section that work; there would have been no trouble?—We had not the time; there was more work to do in cross-sectioning that contract than in running the longitudinal line ten times over.

901. But you had a year and a half from the date of entry into Contract 14?—Certainly not; the line has been changed three times from the original survey that we made, on which the first quantities were calculated; the first line is entirely different from the contract.

902. But the contract for 14 was entered into a year and a half before 15?—About a year, I think.

903. Nearly a year and a half you will find, because one was entered into in 1875, and the other at the beginning of January, 1877; Contract 14 was located?—No.

904. It was let without being located?—It was not located for construction when it was let.

By Mr. Bergin:—

905. When did Mr. Whitehead take charge of the works on No. 15 as contractor? I think, about the time you mentioned the contract was let; he came up to get in supplies in February, 1877.

906. You saw him then?—Yes.

907. Did he inform you that he had taken the contract?—Yes.

908. Did he tell you that he was the original contractor, or that he was associated with others?—He did not tell me anything about it at all; he merely said he was one of the contractors for the work, and he had come up to get in supplies. I understood the contract was let to Sutton, Thompson & Whitehead.

By Mr. Haggart:—

909. Let me understand you before you go any further; do I understand you that No. 14 was let without being located?—There was a preliminary survey made.

910. But there was no location?—The line was not finally located as it is now constructed.

911. It is different now because they changed the location in the course of construction?—No; but there was no location for construction made up to the date of the letting of the work.

912. Only a preliminary survey?—Only a preliminary survey.

By Mr. Bergin:—

913. That is a survey looking for a route?—The preliminary survey looking for a route, and from that the approximate profile and location was laid down; the quantities were taken out and the contract was let. The contractors came up to Manitoba, and we commenced the location of a line in June, 1875.

By the Chairman :—

914. That was Sifton & Ward's contract?—Yes.

By Mr. Bergin :—

915. In November, 1877, Mr. Whitehead asked that a change be made in the character of the work on his contract?—That was on Contract 15.

916. Yes; and you made a report to your Chief recommending that change; did you not?—Yes; I made several reports.

917. Did you make reports previous to that of 22nd May, 1878?—Yes.

918. That of 22nd May was your final report?—Yes.

919. What were the dates of previous reports?—The original report I made on the subject was a verbal report to Mr. Marcus Smith when he was in Manitoba, in the fall of 1877; if I remember aright, about the beginning of November, 1877, or the end of October. He had come up then with a view to inspecting the work generally; he and I and Mr. Whitehead talked over the matter, and I pointed out to him certain difficulties in connection with carrying out the work in the way it was then proposed, and suggested the remedies.

By the Chairman :—

920. What were they?—One was to change the manner of completing the banks across water stretches with a solid rock bank to subsequently carry an earth embankment.

By Mr. Haggart :—

921. That is in your letter of 22nd May?—I think not; the letter of 22nd May does not report upon this subject; but I had made a previous one to Mr. Marcus Smith that does not appear at all reporting on Mr. Whitehead's offer.

922. But what you are speaking of now was a verbal communication with Mr. Smith?—Yes; but I had also a written one. In October when he was there we had a verbal discussion about the matter. I pointed out the difficulty there would be in making up the rock banks. I had had consultations with my assistant, Mr. Carre, who is thoroughly conversant with all the details. The contractor also said that if he was to do the work in the way he was called upon to do it he could not do it in ten years.

923. This was in October?—October 1877; in January Mr. Whitehead had come up and commenced. Mr. Marcus Smith came up in the fall of the year when we had this full discussion of the whole subject. I pointed out to Mr. Smith the difficulty. Mr. Whitehead suggested that if he had, as he was called upon, to use up the rock from the cuttings in filling up the water stretches, and to put in the trestle-work, he must begin on the cuttings next the water and put in the rock, and then, after that was finished, he must put up his trestle-work over the next ravine. It would be a tedious operation and would lengthen the work, and in addition it would require a large amount of rock work for filling.

924. Was not that understood before the contract was let?—It was not discovered because the contract was let in so many different ways. The original idea was that it should be a full and complete contract, banks and everything made up. Subsequently, it was let under the idea that nothing would be done but letting out the cutting and levelling work. The third time it was proposed to have the work done by taking out rock and putting it in with trestle-work upon it. Mr. Smith approved of this suggestion of mine of making up rock banks, and then Mr. Whitehead came forward and said that he thought that it was a great pity the work should be done in this temporary way, and that it was a very unfinished thing, and suggested that if he were allowed, in addition to putting in rock sides, to put in solid earth banks all through, he would charge nothing for the extra haul, which would be a very heavy item. I said to Mr. Whitehead, "Then write me a letter to that effect and I will report on it to the Department." Mr. Smith had left in the meantime, having approved of the change in rock banks over water stretches. On the day he left I wrote a letter to the Engineer in charge, Mr. Carre, stating that Mr. Smith had just left for Ottawa and was about to submit the whole question as to whether the banks should be made of trestle-work or solid banks to the Government, but that in the meantime

he had authorized me to proceed with the change which I had suggested in regard to banks across water stretches or rock sides to be subsequently filled in with earth.

925. Have you that in writing?—Yes.

926. From Mr. Smith?—No; but I have a letter written by myself the day after Mr. Smith left, giving those instructions to my assistant, I will bring the committee a copy of that letter.

927. Do we understand that you have a letter from Mr. Smith?—No, in conversation he approved of the proposed change and instructed me to carry it out. I did so, enclosing a sketch of the change to the resident engineer, and, at the same time, told him the whole question could now be settled, as Mr. Smith was going to Ottawa to submit the whole question of trestle-work or otherwise to the Government. That was at the end of October, 1877. In the meantime Mr. Smith had authorized me to make the change with regard to the bases. In the meantime he had verbally authorized me to make the change I suggested for rock sides across water-stretches, to be subsequently filled in with earth instead of a solid rock base. I heard nothing further respecting the matter until I came down here to Ottawa.

By Mr. Bergin:—

928. I understood you to say that you had a letter from Mr. Whitehead, suggesting the change before you discussed it with Mr. Smith?—I am coming to that. On the 6th November Mr. Whitehead wrote me a letter (after this conference we had with Mr. Smith, at which Mr. Whitehead was present) making the proposal that he should make the whole banks; in fact, you will find the proposal in his letter. The letter is here; you can see it for yourselves. As soon as I received that letter I wrote to the divisional-engineer for certain information in order that I might make an intelligible report to the Government on which they could take action—or at least to my chief. It took considerable time as they were very busily engaged; the contractor had a large number of men on the work, and we could not delay him as the work had been pushed on very rapidly. I wrote to the engineer instructing him to give me a detailed statement. Then I came to Ottawa, about 1st January, 1878; and as time was pressing, and it was an important matter (I had not received a detailed estimate from the division-engineer), I made a report to Mr. Smith, and this is the letter to which I referred as not having been published in the evidence. I submitted this report, which is a long one, and in which I went elaborately into calculations with respect to the proposed change, on or about 5th March, 1878.

929. Can you produce the letter?—Yes. I calculated how much cheaper it would be to put in rock walls in preference to solid work and fill up the spaces, and even above them, with earth, instead of putting in rock sides and trestle-work, and subsequently filling in with earth. In that letter I pointed out to Mr. Smith that in addition to that there was a new proposition from Mr. Whitehead to put in all the banks with earth and not charge anything extra for hauling, and I showed that was a desirable thing to do in the interest of the road, because it would be a permanent work and there would be no danger of the work being destroyed by fire, of which there would be great danger if trestle-work were erected. I will send the Committee a copy of that letter.

930. Did you get a reply to the letter?—No; it laid two months without any reply being sent. I was on a visit to my family. As time was passing and Mr. Smith did nothing in the matter, I went to see the Premier, Mr. Mackenzie. I got Mr. Smith's Secretary to let me have the letter back from the pigeon-holes, and I took it to the Minister and explained to him that this was a very important matter, a serious matter for the country and for the work, and I was very anxious, indeed, that some decision should be arrived at with respect to it. I submitted the whole subject to the Premier. He was very busy indeed at the time (it was during the session of Parliament), but he listened to what I had to say on the subject, and the propositions of the report which I read, and he seemed to think it was a very desirable change to be made. The impression I had after I left was that he fully approved of the proposed change; that he wanted me to be perfectly certain that I was

right in stating it would be economical to do so ; that I would not tell him it would be economical, and some one else be able to show it would not be economical.

By Mr. Haggart :—

931. Did he authorise you to make the charge ?—Not further than he approved of the suggestion.

932. Do you know at what date that occurred ?—It was a short time before my letter to Mr. Fleming.

933. Was it after you were examined before the Public Accounts Committee or before ?—I really cannot answer that question.

934. You were examined before the Public Accounts Committee ?—Yes.

935. Was it before or after that ?—I think it was after that.

936. Go on with your statement ?—After I had seen the Minister, as I have just stated, Mr. Fleming came out to this country.

By the Chairman :—

937. Mr. Fleming came out in April ?—I don't mean to say he had just arrived. Mr. Fleming had been here some time, but he was so busily engaged there was no chance to give him any information or talk the matter over with him until a few days before I went away. Shortly before I left I was up before the Public Accounts Committee, and nothing at that time had been done in regard to the matter, as was then stated, and then I submitted to the Minister this plan (I would not be positive about it) ; but at all events I was anxious that something definite should be done, as I considered it was a subject of very great importance. I saw Mr. Fleming, who was going away, I understood, back to England, and said to him, "Before you go away, Mr. Fleming, there is a most important matter in connection with the work in my district, respecting which I would really like you to do something. It is a serious question to the country, and although it has been before Mr. Smith for some time, since 1877, he has taken no action. I would esteem it a great kindness on your part if you would release me from the responsibility in connection with the subject, upon which I have made a report." He said, "I have not really time to go into the matter ; I do not think I can interfere in it." I said, "It is a most important question, and I wish you to bring it before the Government. I will write you, giving an outline of my views, and if you will report on it I will be very much obliged." He said, "Very well ; write a letter." I did so ; that is the letter published. That is not the letter to which I referred as having been addressed to Mr. Smith.

By the Chairman :—

938. Do I understand that Mr. Fleming conferred with Mr. Smith about the matter at all ?—I do not so understand. Then I left.

By Mr. Bergen :—

939. Mr. Sandford Fleming reported on the proposed change ?—He reported in favor of it.

940. Did you see Mr. Fleming after he reported, and before he went to England ?—Yes.

941. What did he say ?—He told me he had made a report on the subject.

942. He did not authorize the change ?—No.

943. Nor Mr. Mackenzie ?—Nothing more than I have told you.

By Mr. Haggart :—

944. How did you come to make the change ?—I have made no change.

945. No change ?—I have authorized none.

946. Did the contractor make any change ?—Those rock sides are being done ; that's the only change.

By Mr. Bergen :—

947. What about the earth filling ?—There has been nothing done about that yet.

948. Has not the earth work been largely increased ?—Not yet ; there has been nothing done.

By the Chairman :—

949. Where do the calculations on the estimates we have before us, reporting the condition of the contract and shewing an increase, come from ?—I suppose from the

office of the Engineer-in-Chief; I suppose they are based on the estimates I have sent in.

950. Well, according to them Mr. Whitehead was to have executed 80,000 yards of earth work at 37 cents?—Yes.

951. How much has he executed?—224,300 yards.

952. How much more has he to execute?—1,433,000 yards.

953. Does not that involved a change in his contract?—That is the estimate if it is completed with embankments.

954. But he has already done 224,300 yards additional?—Yes.

955. On the contract as it now stands you say he can still go on and execute it with the trestle-work?—Certainly, sir.

956. What additional cost would that involve?—It would involve the furnishing of the timber.

957. How much would that add to the contract?—I could not say; if it added anything to the contract, whatever it added would be taken off the 1,433,000 yards of earth to be executed.

958. The work, as being executed now, is not being executed upon the principle of furnishing trestle-work?—Up to the present time it is.

959.—It is?—Yes.

960. And these estimates furnished to the Department are furnished with the idea that you can return to the trestle-work at any time?—Yes.

961. As a matter of fact, did Whitehead report to you that he could not get the timber to finish that contract?—I reported to the Department.—I can give the date of the letter—that the timber could not be found in the country.

962. And yet you say this work can be finished with the trestle-work which Whitehead cannot furnish?—Certainly he can furnish it; he can bring it from the United States.

963. But he has recommended this change to you?—He has made the suggestion.

964. He made the suggestion to you, and his inability to furnish the timber was mentioned as a ground for the change?—I don't know about that.

965. As compared with other contracts, do you consider some of Whitehead's prices are high; for instance, rock \$2.75?—Yes; that is high.

966. Loose rock, \$1.75?—That is high.

967. Do you consider that earth at 37 cents, as compared with other contracts, is high?—I do.

968. Every one of these items under the contract would be largely increased in the changed plan Whitehead suggested?—No.

969. According to that estimate Whitehead tendered for 300,000 yards of work at \$2.75?—Yes.

970. According to the present estimate he will furnish 525,000 yards at \$2.75?—He will do that whether trestle-work is put in or whether earth banks are put in.

971. Loose rock, 30,000 yards, estimated at \$1.75, is increased to 60,000 yards?—That will also have to be done whether trestle-work or earth banks is used.

972. 80,000 yards of earth excavation at 37 cents a yard, which you say is high, will be increased to 1,657,000?—If trestle work is not put in.

By Mr. Haggart:—

973. Do not you know that Mr. Whitehead is not taking out timber for trestle-work, and that he is constructing the section on the principle that it is to be earth excavation?—I have reported that he is not taking out timber for trestle-work, and I have also reported, as I state here, that up to the present time there is nothing done in that way, but the work is in accordance with the contract, except that the timber for trestle-work is not got out.

By Mr. Bergin:—

974. Are the stone sides in accordance with the contract?—I say that they are done as authorized by the Acting Engineer-in-Chief.

By the Chairman:—

975. The price for timber in the contract is low?—Generally speaking, it is.

976. Can the contractor furnish it at the prices agreed to if he has to go to the United States for it?—I question if he can.

977. Can he furnish it at anywhere near the price?—Some of it.

978. There is \$350,000 worth of timber estimated for?—He could not furnish that quantity of that class of timber for the price.

By Mr. Bergin :—

979. Was that one of the reasons that Mr. Whitehead had to make the suggestion?—I could not say.

By Mr. Haggart :—

980. You say he could not furnish the timber for any such price, and that the prices for the earth work and rock are pretty high?—Yes.

981. You are the engineer in charge of that work?—Yes.

982. As engineer, why do you not see that the timber is furnished?—Because I think the proposed change would be a saving to the country; that is the view I take of the matter. I must, however, obey orders, and what orders I receive I will see carried out. If I receive orders to put in trestle-work instead of solid banks I will make Whitehead do it though he should lose money; but if he loses money by doing it the country will lose more.

983. You have nothing to do with that?—I think I have to look after the interests of the country.

984. Here is your duty as I understand it; you have a schedule of the different quantities; you know he has a high price for rock work and a high price for earth work, but you say you are working on the principle that the system may be adapted to the timber being put in?—Yes.

985. Now you have allowed him to do the two species of work for which he has a very high price; suppose he should say after he has done that, that he cannot put in the timber?—All I can say about that is that everything that has been done up to the present time, the quantities of earth given in that estimate, the loose rock and the solid rock for which he has large prices, must be done either by Whitehead or some one else, whether the trestle-work be put in or not.

By Mr. Bergin :—

986. But why have you not made him put the trestle-work in as he goes along?—There are places ready for the trestle-work; a large amount is put in; we have an amount of trestle-work in now.

By the Chairman :—

987. How much?—I cannot say how much, but there is quite an amount of it done.

By Mr. Haggart :—

988. Mr. Fleming says and Mr. Smith says there is a change in the work altogether, in which their evidence is at variance with yours?—I can produce the letter. I have given no instructions to alter the work; nor has any change been made except the one I have referred to as approved by the Acting Chief Engineer; before I made that alteration I had the verbal order of the Acting Chief Engineer to do it; and I wrote a letter after he left Manitoba to my Engineer conveying instructions to him; I refer to the instructions in the letter which you have not got, and which I will produce.

By Mr. Bergin :—

989. Do you remember that Mr. Smith made his visit to your work last year?—I do.

990. What date was that?—Sometime in September.

991. Did Mr. Smith notice that you had made any change on the work since the previous year?—Yes; he was conversing on everything that had been done.

992. Did he bring it under your observation?—I brought it under his.

993. Did he refer to the plan you had recommended the winter before?—I could not really say as to that, but I think so.

994. And he asked you to telegraph to Ottawa for the authority under which you made the change in the work?—I understood that he came up at that time with a view to settling the whole question as to how the work was to be carried out.

By Mr. Haggart:—

995. You have seen his evidence?—I have glanced over it; he was there the year before, when he left a letter which I can produce.

By Mr. Bergin:—

996. That was in September?—No.

997. I am speaking of his visit last year; he then asked you for your authority for the changes you made?—Yes; and I showed it.

998. What did you show?—His own authority.

999. Did you tell him you had authority or instructions from Mr. Fleming?—No; I made no change but putting the rock sides for solid rock banks; that is the only change I made.

1000. Then why did you telegraph to Ottawa for Mr. Fleming's letter and your report?—Because Mr. Smith told me he knew nothing about it.

By Mr. Oliver:—

1001. I understood you that Mr. Smith had authorized the change?—That letter was before him for two months.

By the Chairman:—

1002. But he did not know what action had been taken?—It was for him to take action.

1003. And because he did not take action you applied to Mr. Fleming?—Yes.

By Mr. Bergin:—

1004. Did you tell Mr. Smith you were waiting instructions?—I told him I was waiting instructions from him.

1005. What answer did he make to you?—He told me he had no authority.

1006. Did he tell you he expected to get information from you as to what was going on?—He had all the information; I gave him all the information in my power.

1007. You told him there was a letter Mr. Fleming had sent to the Department, and that was all you knew about it?—No; that was not all I knew about; I also told him of my letter of 5th March, of which he knew nothing.

By the Chairman:—

1008. That letter was before him for two months, and yet he knew nothing of it?—Quite so.

1009. Then how could it have been before him?—I do not know.

1010. And yet you say he had it before him?—I still say he had it before him, and ought to have known something about it; he had it before him nearly two months before I applied to Mr. Fleming.

By Mr. Bergin:—

1011. Did Mr. Smith give you any instructions as to the work then?—Yes.

1012. What did he tell you to do; did he tell you to go on in the same way?—Yes.

By the Chairman:—

1013. What time was that?—That was last September.

1014. He told you to go on with the work in which way?—In the way we were before.

1015. Give me his instructions definitely?—I cannot give the exact words.

1016. It is very important that we should have them?—The best answer I could give you to that would be to bring you a copy of the letter he wrote to me.

By Mr. Oliver:—

1017. Bring the letter?—I will.

By the Chairman:—

1018. Where was it written?—It was written in Winnipeg.

By Mr. Bergin:—

1019. When?—Last September.

By Mr. Oliver :—

1020. And you followed out his instructions?—Yes.

1021. Do I understand that the impression you got from Mr. Smith in conversing with him was that the line should be of solid embankment instead of trestle-work?—The impression I had when I left in July was, that Mr. Fleming had made a report to the Government.

1022. I am referring to the conversation you had with Mr. Smith in Winnipeg, last fall?—That is what I am coming to. I was aware that this report had been made by Mr. Fleming, and that he had gone back to England. I was aware that nothing further in the matter had been done; and I understood that Mr. Smith was coming up expressly as representing the Engineer-in-Chief and the Government in the matter.

By the Chairman :—

1023. How did you understand that?—I think I understood from some communication I had had from Ottawa, that he was coming up to settle everything.

1024. You said you understood he was coming up expressly for that purpose?—To settle everything on the line; no doubt that was his object; and the very first thing I said to him, if my memory serves me right, was that I was glad he had come because this important question had to be settled.

1025. What question was that?—The question of trestle-work or rock; or rather, earth banks for trestle-work; to my astonishment he said he had no power to settle it. I was never so much surprised in all my life, as I fully expected he had come up to settle this important question.

1026. What did you do afterwards?—When he seemed to be in ignorance of Mr. Fleming's letter and mine, I telegraphed to Mr. Smellie, asking him to send me copies of the correspondence, which he did.

By Mr. Bergin :—

1027. You telegraphed only for Mr. Whitehead's letter and Mr. Fleming's report?—I did not ask for my own letter because I had a copy of it in Winnipeg.

By the Chairman :—

1028. Then what happened?—Then, if my memory serves me aright, he said he had no authority to settle the matter.

1029. When you telegraphed for the letters did they come?—They came with a letter from Mr. Smellie saying that he enclosed the whole correspondence.

1030. You then showed them to Mr. Smith?—Yes.

1031. And what did he say; did he say he had no authority?—He told me before they came he had no authority. He had been over the work. He gave me a letter, when he was leaving, stating that I should carry out the instructions, and he would represent the whole matter to the Government.

1032. What instructions?—The instructions he gave me.

By Mr. Bergin :—

1033. Have you the instructions?—They are in the letter.

By the Chairman :—

1034. Between the time you communicated with Mr. Fleming, and the time you saw Mr. Smith, what had you been doing on the work?—We had been making up the sides of rock banks, in the manner I was authorized by Mr. Smith in the previous November.

1035. Had Mr. Whitehead been given to understand that the matter was favorably received by the Government?—I gave him to understand that.

1036. Do you know whether he had been given to understand that?—No.

1037. Had you any conversation with him to that effect?—No.

1038. Had you any conversation with Mr. Whitehead in regard to the matter after you left here?—Mr. Whitehead was conversant with the exact position of affairs as they stood.

1039. How could he be conversant with it, if you did not understand it yourself. You telegraphed down to find out?—I do not understand you.

1040. When you met Mr. Smith and found there was a misunderstanding, you telegraphed down for the papers?—Yes.

1041. How could Mr. Whitehead understand the position, unless you had communicated with him?—I said, speaking of the matter up to that period, that Mr. Whitehead was conversant with what had been done. I said I reported on his offer, and Mr. Fleming made a report on his offer.

1042. Did Mr. Whitehead understand that the Minister of Public Works was in favor of it?—I fancy he did.

1043. He had had some conversation with the Minister?—I do not know anything about that.

1044. You are sure of that?—I do not know.

1045. He left Ottawa under the suspicion or expectation that the recommendation would be adopted?—I fancy so.

1046. Don't you know?—I have no reason to say one way or the other; he was going on with the work.

By Mr. Oliver :—

1047. As directed by the Engineer?—Yes.

By Mr. Bergin :—

1048. You say you had instruction from Mr. Smith to make this change?—Yes.

1049. Why, then, did you seek orders from Ottawa; why did you make a report to Mr. Fleming; and why did you go to the Department to get orders if you had the order already?—For this reason: I applied for authority to my acting chief, Mr. Marcus Smith, to carry rock sides across waters, instead of solid rock bases, and to fill them up for earth banks, and I received his approval. This was only doing away with a portion of the trestle-work, as my letter, when it is produced, will show you. Then came the larger proposition to do away with the trestle-work altogether.

1050. But this larger proposition was not authorized by Mr. Smith?—No; the other proposition was for doing away with a portion of the trestle-work.

1051. Practically, the trestle-work has been done away with since you went up in May last?—I don't think so; I am just waiting to know whether it is to be gone on with, or whether we are to have solid banks.

1052. The solid foundations have been put in?—No.

1053. Now then do you account for the immense increase in the earth?—By the fact that the original estimate for the earth was entirely problematical; we had no accurate knowledge of what the earth would be.

1054. And you don't know who made that estimate?—Yes I do; it was my assistant, Mr. Carre.

By the Chairman :—

1055. Is Mr. Carre here?—Yes.

By Mr. Bergin :—

1056. He made up the estimate for this contract?—He made up the estimate of quantities of earth, and I made up the trestle-work.

1057. The whole of the contract was based on your estimate?—Yes.

By the Chairman :—

1058. I would like to know when this further estimate was made up and when it was put in the possession of the Department?—I asked my assistant-engineer for an estimate that would enable me to state to the Government the difference of cost between completing the road with trestle-work, as originally contemplated, and completing it with embankments. That estimate was made up and I submitted it.

1059. This is the estimate, then, that speaks of an increase in the earth and very little timber?—Yes.

1060. You estimated the additional cost at \$250,000?—Yes.

1061. Are you aware that the change involves an additional cost of over a million?—No, I am not; I can explain that to you; you are putting on to the cost of the change the additional cost that would occur whether embankments were used or not. That is explained in my letter, and it is owing to the change of grade.

1062. Was the Department aware of that additional cost?—As soon as I was myself.

JAMES H. ROWAN.

(Letters handed in by Mr. Rowan.)

WINNIPEG, 3rd November, 1877.

DEAR SIR,—I am in receipt of yours of the 28th October. Mr. Smith left for the east yesterday afternoon. He will submit the whole question, of making up the banks with earth and doing away with trestlework, to the Government.

In the meantime he has authorized me to have the banks across lakes made up in the manner we proposed; that is, with a narrow rock bank on each side, brought up to three feet over high-water level, placed wide enough apart to carry the sand embankment and leave a berm of two feet outside. I shall telegraph you to this effect so soon as the line is working.

The area of the section for tunnel I sent you, was about three feet in excess of that of a twelve feet circle. I now enclose you one which will be the same (and from which you will work), or so near as to be practically the same. You will return the quantities as per this section.

The contractor must furnish stringers in accordance with the drawings.

Truly yours,

JAMES H. ROWAN.

H. CARRE, Esq.,
Division-Engineer, Contract 15.

OTTAWA, 5th March, 1876.

DEAR SIR,—Early last November Mr. Whitehead had a conversation with me in reference to being permitted to make up the embankments on Contract 15 with earth or sand in lieu of trestle-work. I requested him to put his proposition in writing, in order that I might submit it to the Department through you; about the same time I wrote to Mr. Carre (5th November, 1877) requesting detailed information on the subject, which I could submit at the same time; my letter to him was as follows: "Detailed information on the subject, made up under the following heads, giving the quantities and cost as near as possible.

"1st. The cost of completing the line according to the present design.

"2nd. The cost of same, substituting earth or sand filling instead of trestle-work.

"3rd. Cost of completing line as at present contemplated, and subsequent filling in of trestle portion with earth or sand.

"Note.—All items, such as masonry, bridging and stream tunnels, &c., &c., which would be common to all three plans, may be disregarded in the calculations, or, better still, given in a bulk sum common to all three."

"The estimate under the first head should show the quantity and cost of rock in line cuttings, and such clay or sand as is contained in the same; together with sand and clay which can be easily obtained by borrowing, and the quantity and cost of the trestle-work required to fill up the ungraded portion remaining after the above is done. The line, as regards grading, being considered completed under the present contract when this done."

"The estimate under the second head will show the cost, with the trestle-work, done away and earth or sand substituted."

"If trestle-work must be retained at some points, you will bear in mind that it will prove most economic in high banks at points other than water stretches."

"The estimate under the third head explains itself. I have not yet the necessary data, in the shape of longitudinal and cross-sections, &c., furnished me by you, to enable me to have these estimates made in my office. As it is very important that I should have this information at the earliest practicable date, you will, therefore, prepare and forward it to me."

"There must be a clear understanding with the contractors, as to the fact, that if consent is given for earth filling, in lieu of trestle-work, all the banks must be so

made up, or at least those that the engineer may order to be done, and not those that he, the contractor, may select."

On the seventh November last, I received the enclosed letter from Mr. Whitehead, making a formal proposition in connection with this subject.

Before leaving Winnipeg, to come down here, I again wrote to Mr. Carre (17th December), informing him that I had received this letter and added: "Before, however, I can submit this to the Department I must be in a position to lay before it an approximate estimate of the cost of both ways of doing the work." Hence my letter to you of the 3rd November.

"Mr. Marcus Smith having approved of the plan for making the banks across water-stretches, with rock sides to be filled in with earth and sand, these are now estimated from the calculation for trestle-work, and I shall be obliged by your letting me have an approximate estimate of the other portions, at the very earliest practicable moment. The object of such estimate being to show the respective cost of filling in the openings in the banks, for which there is now no material, in the first place with trestle-work which will be subsequently filled in with earth and sand. And, the cost if now filled in with these materials at the contract price, the trestle-work being abandoned either altogether or as far as practicable."

I may here call your attention to the fact that, while it will be necessary in all cases to have the superstructure of the trestle-work made of the best squared timber, a considerable portion of the timber to be used in the "bents" may be round; only squared at joints, mortices, and tenons, thereby materially reducing the cost (at cost rates).

Mr. Carre promised to let me have the information asked for in these letters before this date, but as I have not yet received it, I now hand in Mr. Whitehead's letter, with such information bearing on the subject as I am in a position to give at present; I may hear from him within the next few days, and then be in a position to give you further information.

The present grades on Contract 15, in their relation to the cuts and fills, were adopted with a view to keeping down the first cost, by reducing the rock cuttings. The material taken from these to be used in the first place, where necessary, for bringing up the banks across lakes and bays to three feet above high-water level, and of such a width that, at some future date, earth embankments could be formed upon them without the top of the latter being in the water.

In the meantime trestle-work, placed upon these rock banks, would carry the track over these uncompleted banks, and at other points where sufficient material could not be obtained to make them up.

It was decided to make the rock banks as above described, to prevent the timber work in trestles from being acted upon alternately by air and water; and of that width, in preference to narrower (only sufficient to carry the trestles) as, had this latter plan been adopted, more earth would be required to complete them subsequently; and, after completion, rock would have to be procured for rip-rap at their base, to preserve them from the action of the water.

At the time when it was determined to adopt the plan above stated, all the information which had been obtained, led to the belief that very little material other than rock could be procured on the section. During last summer, however, the men and tools, &c., required for making examinations, being on the ground, it was ascertained that a considerable quantity of sand and clay could be obtained at some points on the line and from borrowing pits. To place this in the works, however, a very considerable length of haul will, in some instances, be necessary.

That this discovery has a most important bearing upon the method of constructing the work previously determined on, the accompanying diagrams and calculations prove, as they show that—

1. Earth embankment is cheaper than trestle-work for banks of less than 18 feet in height;

2. If a rock base of full width, for subsequent earth bank on top, is more than half the total height of the bank, a rock bank made up to grade would be less expensive;

3. A rock base on rock sides, less than 10 feet in height, will not reduce the cost of constructing an embankment;

4. Rock sides (as in Figure 1) filled in with earth to full height of embankment, is in all cases at least 33 per cent. cheaper than a full width rock base with trestle-work, and nearly 50 per cent. cheaper than this same bank with earth filling work upon it;

5. Banks between 20 and 50 feet in height, will ultimately cost from 57 to 09 per cent. more, if crossed in the first place by trestle-work and subsequently filled in with earth, than if made up with earth now.

These facts are arrived at from the following data:—

1. The rates at which the cost of the different classes of works are calculated are those of the contract, with the exception of "subsequent fillings in earth when trestle-work is used in the first place;" this is calculated to be done at 20 per cent. less than the contract price for earth filling.

2. Earth slopes are taken at $1\frac{1}{2}$ to 1; rock slopes at 1 to 1.

3. Rock in *situ* is to rock in bank as 2 to 3.

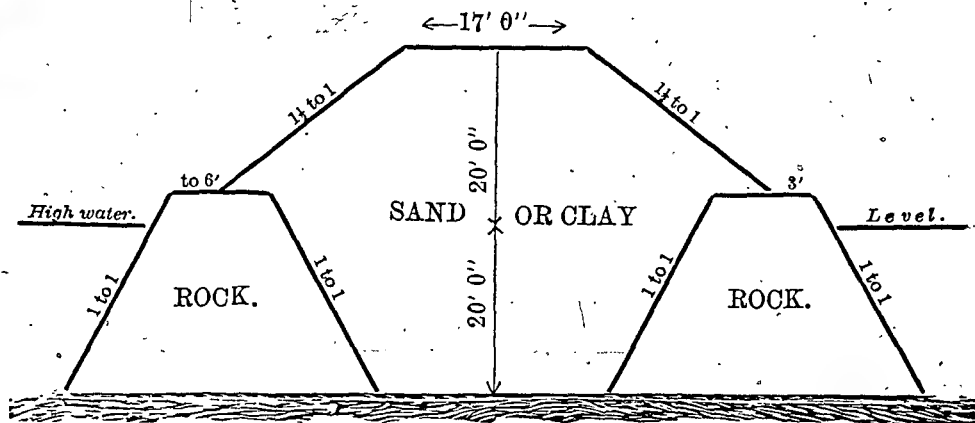
4. Earth in *situ* is to earth in bank as $1\frac{1}{2}$ to 1.

5. Round timber, or the lowest priced, is supposed to be used in all "bents;" square timber, or the highest priced, is supposed to be used in all "superstructure."

6. Keeping the five heads above in view, the relative cost is, per lineal foot:—

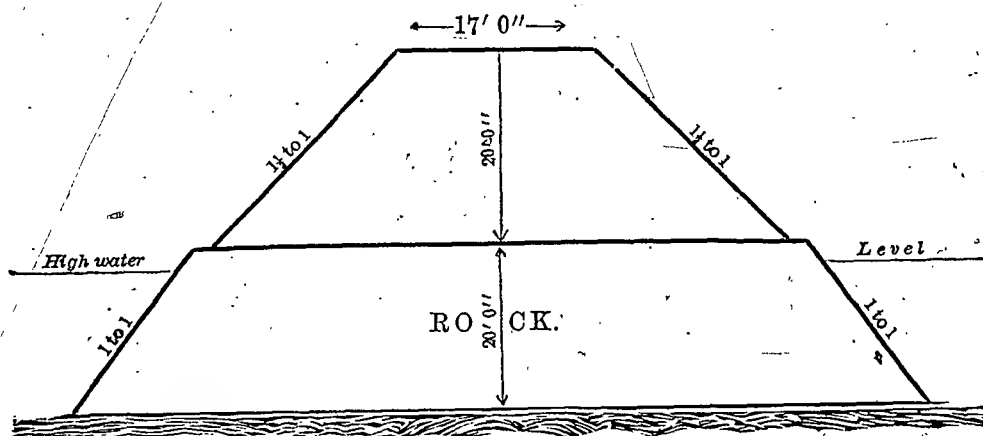
Trestle-work.	Earth bank.	Rock bank.	Height of embankment.
\$10 02	\$4 25	\$18 30	10 feet
10 96	14 27	50 16	20 do
13 38	28 24	95 56	30 do
16 25	46 76	154 52	40 do
20 38	69 84	227 04	50 do
21 18	110 70	353 39	65 do

Figure No. 1.



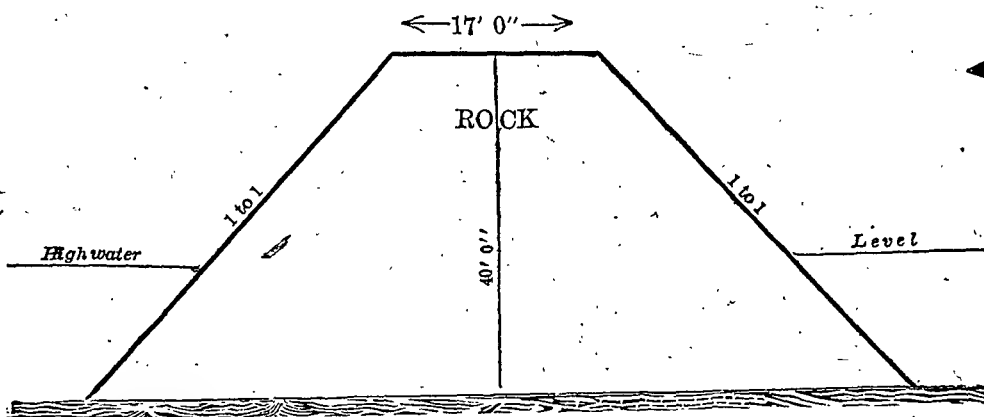
Rock sides, earth core and top cost per lineal foot.....\$100 25

Figure No. 2.



Rock base and trestle-work top cost per lineal foot.....	\$150 57
do and earth do do	153 59
do and trestle-work with subsequent earth filling per lineal foot	162 41

Figure No. 3.



Full rock bank, cost per lineal foot.....	\$154 53
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A 20 feet bank will cost per lineal foot:—

1. If earth with rip-rap sides 10 feet high	\$20 28
2. If sides rock (as Fig. 1), 10 feet high, core and top earth	31 26
3. If base rock (as Fig. 2) 10 feet high, top earth	47 55
4. If all rock (as Fig 3)	50 16
5. If base rock (as Fig. 2) 10 feet high, top trestle-work..	52 71
6. If do do do top trestle-work with subsequent earth filling	56 74

A 30 feet bank will cost per lineal foot:—

2. If sides rock (as Fig. 1) 20 feet high, core and top earth	81 73
2. If all rock (as Fig. 3) 20 feet high	95 56
3. If base rock (as Fig. 2) 20 feet high, top earth.....	103 80
5. do do do top trestle-work.	108 97
6. do do do top trestle-work,	
subsequent earth filling.....	113 00

A 40 feet bank will cost per lineal foot:—

2. If sides rock (as Fig. 1) 20 feet high, core and top earth	\$100 25
5. If base rock (as Fig. 2) do top trestle-work.	150 57
3. do do do top earth	153 89
4. If all rock (as Fig. 3) do	154 53
6. If base rock (as Fig. 2) do top trestle-work	
with subsequent earth filling.....	162 41

A 50 feet bank will cost per lineal foot:—

2. If side rock (as Fig. 1) 20 feet high, core and top earth	\$123 34
5. If base rock (as Fig. 2) do top trestle-work..	193 67
3. do do do top earth.....	208 54
6. do do do top trestle with	
subsequent earth filling.....	217 09
4. If all rock (as Fig. 3)	235 05

A 70 feet bank will cost per lineal foot:—

2. If sides rock (as Fig. 1) 20 ft. high, core and top earth.	\$183 06
5. If base rock (as Fig. 2) do top trestle-work ...	281 94
3. do do do top earth	331 47
6. do do do top trestle-work,	
subsequent earth-filling.....	339 86
4. If all rock (as Fig. 3).....	412 77

Having set before you in general terms, when in Winnipeg, the facts which are here given in detail, I received permission to make the necessary changes in the method of constructing the banks across water-stretches. Consequently, in one or two cases where sufficient material is found in cuttings, close at hand, to make an all rock bank instead of an all rock base (the cost being nearly the same). This course is being followed. In others, rock sides are being made, facilitating the completion of the work, the material for this purpose being obtained from cuttings close at hand, while, to make a full rock base, it would have to be hauled a considerable distance, in some instances.

Trestle-work built of the timber of the country could not be considered safe after it had been in the work five or six years; and the danger of traffic on the line being interrupted at any moment through the destruction by fire of some portion of the great length required on this section, cannot be over-estimated.

The danger from this cause is considerably reduced by the plan now adopted for crossing water-stretches, and would be entirely removed, if the enclosed proposal is accepted; while, at the same time, the character of the line would be more permanent.

In my letter to you of the 26th January last, I called attention to the fact that there are points on the line where the introduction of structures of a permanent character, for which there is no contract price, would do away with high and perishable trestle-work. As the doing away with trestle-work will, no doubt, be of pecuniary advantage to the contractors, I would recommend that they should be called upon to

put in structures, where required, either of the character named in that letter or any other kind of culvert masonry, at rates proportionate to that given in their tender for bridge masonry, and this in addition to the offer contained in the enclosed letter.

By adopting this course, the whole work will be made of a permanent character, the first cost not increased materially, while the ultimate cost would be materially decreased.

Yours truly,

JAMES H. ROWAN.

MARCUS SMITH, Esq.,
Acting Engineer-in-Chief.

TUESDAY, May 6th, 1879.

Sub-Committee met.—Mr. PLUMB in the Chair.

Mr. HENRY CARRE called and examined:

By the Chairman:—

1063. You are Resident Engineer of Section 15?—I am.

1064. Did you furnish the quantities upon which the original contract was taken?—
— did.

1065. Were you here at that time?—No; the quantities were made up at Winnipeg; Mr. Rowan and I were there together.

1066. You and Mr. Rowan made up the schedule upon which the contract was undertaken?—Yes.

1067. There are two other schedules of quantities; did you make them up?—
Yes; I made them all up.

1068. In this case, why was there so small an amount of earth excavation; 80,000 yards?—Because it was nothing but gullet slopes that we calculated in the two first estimates. To understand the thing, I think I had better tell you how the whole of the estimates were made. I was sent up in 1874 to make a trial location—that is to run a trial line, and then locate it; and if it would come anywhere near, it would show a practical line. My instructions were not to back up again, but to be able to say that I could improve on certain places.

1069. That was in 1874?—Yes; this line was pushed through as fast as I could push it. I had 114 miles to run that season.

1070. You are referring to the two lines to Cross Lake, and then to Keewatin?—
Yes.

1071. It is the Keewatin contract we are talking about now?—I am just showing you I had such an amount of work to do in the season that I had to hurry through; the country was so much more broken and difficult than it had been represented to me to be, that I was a great deal longer in getting through than I anticipated I would be. We just ran through, using the men that packed the provisions, on days when we were not moving the camp, to chop out a line which I ran with my eye and a pocket compass; then as soon as the transit men came along they ran the transit and level over it and plotted it; then I put down the location line, and the location men ran that line. If the profile showed, as I said before, a practicable line, then I was satisfied. I never went back over it again, so that I never actually saw the country after the line was located. When I got over Cross Lake, and was about ten miles on Contract 14, I was asked for the plans and profiles which I was told had to be sent in. So I went on to Winnipeg, and made the best plan I could.

1072. Then you were going west?—I was going west; I located the line westward.

1073. You had run across the eastern Section, No. 15?—I had located that.

1074. And you had got about ten miles on Section 14, when you were called to make your Report?—When I was called to make up an estimate.

By Mr. Haggart :—

1075. You say you had located the line; it was a location survey, was it not?—Yes; that is, I ran in the curves; it is such a broken country that if you go a few feet to either side it would make a great difference. You could not cross-section so as to get anything like an approximate profile unless the curves were run in.

By the Chairman :—

1076. It was not a final location?—No; it was not at all a final location; but it was within a few feet of the present line.

1077. Within a few feet?—Yes; and identical for a long part of it. In certain places it is not the same. I sent in a plan showing the alterations I made. But I must proceed with my narrative. I got into Winnipeg, and made up the plan and sent it down to Ottawa. Then I remained some time there doing work around Winnipeg River, and locating the line fifty miles on the other side.

1078. What year was that?—In the winter of 1874 and 1875. I was called down to Ottawa then, and when I got down I found the tracing and the profile, a rough bush profile plotted in camp, which I had sent down from which the heights were scaled; and from that rough calculations were made from centre heights. I have not my figures with me, but the estimate was 640,000 cubic yards of rock (that was the first estimate), and I think 96,000 yards of earth. These calculations were made just from the gullet slopes, that is one quarter to one slope, allowing nothing for depth of earth, because we knew nothing of the depth of earth and could not form an estimate. We could not tell from the surface whether it was earth, rock or loose rock.

1079. You did not know anything about that?—Very little; that is, very little to form an estimate upon. Then that estimate was considered very expensive, and the grades were raised from three to four feet.

1080. To reduce the rock?—To reduce the rock and increase the filling.

By Mr. Haggart :—

1081. Before the grades were raised was not there some other survey besides your location?—No; this was in the spring, after I had made the trial location. The grades were raised some three or four feet, and I calculated from the level book the cuts and fills. That was more accurate than the first estimate.

By the Chairman :—

1082. How did that leave it?—That set it at 369,400 yards of rock, and 1,979,000 yards of earth; so you see how the raising of the grade increased the earth and diminished the rock.

1083. When did your estimate go in?—It went in at the same time as the other; they were both made as a comparison of quantities on, you might say, the same data. Then the third estimate was made in this way. When I had re-located the line I was asked, on the spur of the moment, to say what the differences between my re-survey and the old line would be—what difference in quantities. Taking the old estimate of 320,000 yards of rock, and the 30,000 yards of loose rock, I calculated the solid rock quantities. I was asked whether I had made any reduction on the quantities.

1084. By whom?—By Mr. Rowan: I showed him one or two places; one place where I had taken out a large rock cutting of 26,000 yards, and another place where I had made great savings, as I consider it in the quantities. Then I said taking that 320,000 as correct—if it was correct, but I did not think it was—the rock would be 300,000 yards. That is the way that came about. It was mere guess work all through; it was totally impossible for any mortal man to estimate the quantities accurately.

1085. It could have been estimated if it had been carefully surveyed?—If it had been cross-sectioned and the cuttings examined so that we could get down to the rock surface, then it might have been done; but not otherwise.

1086. Did you so advise?—I did.

1087. Who did you advise that it was totally impossible to get at the quantities?—I told Mr. Rowan, and he knew himself that the centre heights would not give the quantities on account of the rough side hills, and every man knows that.

1088. You say you estimated the earth at 1,979,000 yards?—That 80,000 was intended to be nothing but the stripping of the rock on the gullet slopes, and the remainder was estimated very roughly, to be filled up with the trestle. Of course we had no data. To make an estimate for the trestling required more accurate data than for the earth calculations, because every twenty-one feet there would have to be a cross-section to find the height and shape of the bents you were going to put in.

1089. It would require more accurate engineering than any other part of it?—Yes; it is bridge work in which you would have to find a good foundation for every bent, to cross-section the ground and dig proper foundations, before you could accurately estimate how you were going to put in the bents.

1090. This last bill of works is the one you are referring to; you and Mr. Rowan together prepared it at Winnipeg?—Yes, at Winnipeg. We had only two days to do it in, so that it was totally impossible to make the re-calculations.

1091. Do you remember when that was done; it is the one on which the contract was let?—It is dated.

1092. It is not dated?—The bill of works gives the date.

1093. How did it happen that you had only two days in which to prepare it; and under whose orders was it done?—I don't know. Mr. Rowan just asked me for the information. The order came from the head office.

1094. Mr. Rowan will know, I suppose?—He ought to know.

1095. He told you it must be done immediately?—Immediately, yes. Remember I never gave the estimate as an accurate estimate of the cost. If I had been asked to estimate the actual cost of the work, I would have refused point-blank to pretend to give it. No mortal man could give it.

By Mr. Bergin:—

1096. On that survey?—Yes, on that survey.

By the Chairman:—

1097. How long were you employed on that survey?—I began at Rat Portage in the end of July.

1098. I am speaking of Section 15?—I crossed Cross Lake about 5th November; so that it would be from the end of July to the beginning of November, as well as I can remember.

1099. How many men did you have?—I had a party of, I think, thirty men. We had to cut our own trails and explore new portages.

1100. Then, what was the time from Cross Lake to Selkirk?—I did not run the whole way to Selkirk; I ran to the boundary of Manitoba, and joined in there with Mr. Brunel.

1101. You said that when you got ten miles on No. 14, you stopped?—When I got ten miles on, I was sent for to Winnipeg to make up the plans, but the party went on just the same; they were in an easy country then, and were running just a trial line.

1102. The work on Section 15, as you estimated it in the third bill, was intended to be trestle-work and not earth?—Yes.

1103. That was the plan upon which that contract was to be let?—Yes, that was the plan at that time.

1104. What time did Mr. Whitehead come up there?—I cannot remember exactly when he arrived on the ground, but I think it was in the fall of 1876.

1105. When did he begin work?—I think it was in February 1877; it is in the first estimate.

1106. I thought you might have some memorandum of the dates?—I have not got it with me.

1107. Did you understand when he came up and went to work that he was going to work on the principle of making trestle-work?—I certainly did.

1108. Was there any conversation between him and you about a change of plans?—He talked about the matter with me and said it was a pity to put in such perishable structures as trestle-works.

1109. When was that, as soon as he got there?—Oh no; some time afterwards.

1110. Who was his engineer?—Mr. H. N. Ruttan.

1111. Well, what passed on the subject?—Merely talk; I said if the contractor could put in earth banks it would make a better job of it; and I thought it was a great pity to put in perishable structures, which would cost so much but it was merely talk as far as it went with me, until he afterwards laid the proposition before Mr. Rowan in writing to be sent down to the Department.

1112. Did you know he was going to make that proposition?—I knew he talked about it.

1113. But did you know as a matter of fact, that he was going to make it before he sent it in to Mr. Rowan?—No, I cannot say that I did; there is often a great deal of talk without anything being done.

1114. When did you know that he had sent it?—Not till after he had done so. Mr. Rowan wrote to me afterwards to say that he had done so; that was the first notification I had of it.

1115. Up to that time was the work going on in conformity with the plan of putting in trestle-work?—Certainly.

1116. At what time was it that you ascertained he had written?—I cannot remember; I have no notes with me now; I think it was in November 1877; that is the date I think, of Mr. Rowan's letter.

1117. Did Mr. Rowan write to you to make an estimate upon which he could make a report here?—He did.

1118. When was that?—The same day, I think.

1119. Did you make that estimate yourself?—I did.

1120. Did you pretend in making that estimate, to give an accurate statement of quantities?—No; it was very rough.

1121. Mr. Rowan bases upon that a report to the Department and makes up a compound interest account upon it; he must have supposed you were giving him a very correct estimate of quantities, you being on the ground?—But his estimate was based on solid banks and a change in the manner of crossing the water stretches.

1122. He says that this change will add to the amount of the original contract about \$250,000; now that estimate could not have been based upon the change in the original contract only; there must have been some other changes connected with it upon which he made that statement?—There were no other changes except that the line which we are working on now is not the original line; it has been altered in different places.

1123. But what I want to get at is whether Mr. Rowan understood from you that your estimate was a definite and accurate estimate?—It was as accurate as we could get it; we had the country cross-sectioned at that time.

By Mr. Haggart:—

1124. You had it cross-sectioned?—Yes; I had better data to go on, and that is the reason why the last estimate, 525,000 yards of solid rock, is such an increase over the other. By cross-sections you catch a great number of points of rock that do not show upon a centre line at all.

By the Chairman:—

1125. Do you mean to say that when you made that report you considered it accurate enough for him to make the report which he did make upon it, and to make up a compound interest account upon it, as if it were an actual and final statement of the work?—I think you will find that it is not far wrong.

1126. We will see how it turned out; do you know who furnished this estimate of further work to be done on Section 15?—Any calculations that were made were made by me.

1127. Here is the estimated cost of completion?—I sent that in.

1128. When did you send it in?—In February, 1878.

1129. That was to be the estimated cost of the completion of the work under the changed plan if Mr. Rowan's report were adopted?—Yes; it is made up for full earth banks, the trestling being done away with.

By Mr. Haggart :—

1130. You understood that the work was to be changed to that character?—Certainly, when I made the calculations which threw out all the trestling.

By the Chairman :—

1131. Mr. Rowan writes, in his report, that to complete the works with earth instead of with trestle-work, there will be \$550,000 difference; he allows \$362,000 for the trestle-work which leaves \$188,000, and adds \$70,000 for masonry and permanent structure, so that to make out that the additional cost of the work, if the recommendation he makes is carried out, will be \$258,500; now you make out the additional cost to be the difference between the \$1,594,000 and \$2,525,000?—I think his difference is between making it up in the original manner with trestle-work, and making it up with full earth banks and permanent structures, but the first was never intended to be an accurate estimate of the quantities, and no mortal man could give an accurate estimate.

1132. Was there any other estimate that you had made in the possession of the Department?—No; this was the only one that was intended to be an approximate estimate.

1133. But that was only an approximate estimate after the change was made?—After the change was made, I gave also an estimate showing how it would be if the trestling was put in calculated from more accurate data.

1134. What I want to get at is this: Mr. Rowan has reported that the additional cost for this work would be \$258,000; upon that he has based a compound interest account for five or ten years. Mr. Fleming says that assuming the change would add to the present expenditure \$260,000 he recommends it as sound economy; I want to know upon what data that additional cost of \$200,000 was based. Was it based on Mr. Whitehead's contract; or some statement we have not before us?—It was based upon my estimate. I prepared the two estimates: one was to make the work as proposed by Mr. Whitehead, and the other was, if it was carried out according to the contract, with the rough trestling.

1135. If that estimate is made up, the difference between Mr. Whitehead's contract and that statement is \$1,000,000 and not \$280,000?—You see there are new quantities.

By Mr. Haggart :—

1136. The Department have been in possession of information other than the original estimate, because, as you understand, there were larger quantities than were at first stated. How was the Department to know the difference in the gentleman's letter?—They would know.

1137. What information would the letter convey to the Department?—This estimate went in with it.

By the Chairman :—

1138. Mr. Rowan says it is going to increase the cost by \$280,000; but, according to your calculation, it is going to increase it one million?—I don't say that. This estimate was made from cross-sections, and with the grades lowered. The lowering of the grades made a large difference in the quantities, and therefore the quantities in this estimate—that of 1878—were totally different from those given in the first estimate, which were never intended to be correct.

1139. There is a statement, whose is it?—That is the statement Mr. Rowan made.

1140. Are you prepared to make that statement?—No, I am not. He based it on certain figures I gave him.

1141. If the other plan had been adopted, Mr. Whitehead's contract would have been exceeded by \$1,000,000, less \$258,000. If the trestle-work had been used in the way it was proposed, Mr. Whitehead's contract would have exceeded the amount of his tender by \$672,415, according to your statement, even if he had gone on with the trestle-work?—That is, if the old line had remained, and the old grades.

1142. According to the estimate you have made, the only difference between carrying out the works on that system and putting in trestle-work is claimed to be

\$258,000, which Mr. Rowan reports as the difference. Taking \$930,915, which is the difference between those two items, the contract would be increased if they went on under the old system, and I understand you are so proceeding now, by \$672,415?—That is nothing to base a calculation upon.

1143. We assume Mr. Whitehead received a contract, as the lowest tenderer, upon an estimate for \$1,594,085; we assume, as you have now said, that the contract for carrying it out with rock-work would reach \$930,915; Mr. Rowan says that \$258,500 is added to the cost of the work under that estimate by putting in rock-work. If I deduct \$258,000 from that, which is added according to his statement here, I have a difference between the two estimates of \$672,415. That is the result?—I suppose so.

By Mr. Haggart:—

1144. Was there any change made in the character of the work between the time Mr. Whitehead got the contract and the recommendation of Mr. Rowan as to the subsequent change?—There was no actual change in the character.

1145. I understood you to say that the rock-work was lowered by the embankments?—The grades were lowered.

1146. Mr. Rowan, then, made the calculation of \$258,000 on the intermediary change between the letting of the tender and the time he recommends it?—As I understand it, he says, "if you build the rough trestling instead of banks, it will cost so much, but if you build it with full earth banks, as Mr. Whitehead proposes, it will cost so much; and the difference between these two sums is \$258,000;" but they are both based upon what was the most accurate estimate of the final cost we could make at the time; the comparison between them and the quantities as calculated in the first place shows that there has been a great discrepancy.

By the Chairman:—

1147. Then the contract was let upon an estimate that is entirely fallacious, and the cost has been enhanced even though the change was not made?—These quantities were only put in for a comparison—in order to form a comparison.

By Mr. Bergin:—

1148. It was done for form's sake?—Yes.

1149. It was mere guess work?—Yes. If I had been asked for anything like a true estimate, I would have put on a large amount over that. I might have been asked as to what data I had which led me to add 200,000 yards of rock. I should have replied that such was my opinion as to what should be done. Then everyone would laugh at me.

By Mr. Haggart:—

1150. You were the Construction Engineer for that part of the road; did you receive any instructions regarding the change in the character of the work. What were the first instructions you got after the letting of the works. You say the embankments were raised and the cuttings lowered. When did you get instructions to carry that out?—In 1876 I re-located the line, and all the plans and profiles were sent down to Ottawa. The whole question was gone into here, I suppose, and certain grades were sent back to me, a copy of which I have, showing the grades that were to be used. I found, on plotting the grades on my original profile, that they had been lowered, and the cuttings were more even than before. I worked from those grades, and the second estimate is based upon those grades—not on the first one.

1151. This change was made after Mr. Whitehead had entered into the contract?—Yes.

By Mr. Bergin:—

1152. And where?—It was made here in Ottawa. The grades were sent to me from here.

By Mr. Haggart:—

1153. Then Mr. Rowan's estimate was made on the change of the character of the original estimate?—Certainly it was.

By Mr. Bergin :—

1154. Do you know if Mr. Whitehead made application at Ottawa to have the change of grade made?—I don't know anything about that. In June, 1877, we got the grades.

1155. Did that change of grade involve any change in the timber part of the contract?—Of course it would.

1156. It would reduce the timber?—It would reduce the timber work.

1157. And it would increase the earth work?—It would increase the rock and earth cuttings.

By the Chairman :—

1158. Look at that tender of Mr. Whitehead for Section 15. Is there not a large quantity of timber there?—A very large quantity.

1159. Run the quantity over and see about how much there is?—There is very nearly 16 miles of 15x12 timber.

1160. In the estimate which you have made up you have released all that timber work. You have very largely reduced the quantity of timber to be supplied?—That was thrown out altogether, except for the culverts.

1161. Would that be to the advantage or disadvantage of the contractor?—He has a poor price for timber.

1162. Is it a matter of fact that it would be difficult to get that timber in the part of the country where the contractor is?—I have often stated that it could not be had in that section of country.

1163. Then as a matter of fact, if the contract hadn't been changed, the contractor would have found great difficulty in fulfilling it?—He would.

1164. And probably have lost a good deal of money on it?—I should say so.

1165. The change involving an increase of rock and earth-work was one which might or might not be to his advantage. But suppose the rock was taken at a pretty high price, the change would be to his advantage?—If he had a paying price.

1166. Do you know what was the price for rock named in the other tenders?—I have seen the prices stated in the evidence taken before the Committee.

1167. Do you consider that Mr. Whitehead had a fair price for rock?—Yes; I consider so.

1168. What do you think of his price for earth?—It is high. I should like to say something about that. If you only take the stripping off the rock it will cost a great deal more to pick earth out of the pockets of the rock,—so that in such case the price would not be so high.

1169. If you tendered for only 80,000 yards, and had only that to do, and had all appliances for doing the work, you would require a higher price?—Yes.

1170. And if the quantity was increased you could do the work for a less price?—Certainly.

1171. I observe in the evidence brought before the Committee one or two comparisons are made in regard to the tenders, and cost of haul is added to the tenders, but it is stated that Mr. Whitehead agreed to do away with the charge for haul. Where do you find that he agreed to do away with charge for haul?—Is it not in his letter?

1172. No; but will you kindly read the letter and see whether you can find that he agreed to do away with the charge for haul?—Here he says "without extra charge."

1173. For what?—That is "making up embankments," I may say I never saw this letter until I came here.

1174. The offer to do without extra haul is not there is it?—I don't see it there.

1175. I cannot find it?—I cannot find it myself; but there was the talk; I have heard a great deal of talk, and the statement was that he was to do it without extra charge for haul.

1176. I understand that at a certain time there was a proposition to substitute rock sides for earth?—Rock sides for full rock bases.

1177. I understand from Mr. Rowan that Mr. Marcus Smith directed that change, and I see in Mr. Smith's evidence a direct contradiction of that statement;

do you know who authorized it?—I received a letter from Mr. Rowan stating that Mr. Smith had authorized it, and telling me to go ahead with the work.

1178. Mr. Smith's evidence is a direct contradiction to that?—So I understand.

By Mr. Haggart :—

1179. You were authorized by Mr. Rowan?—Mr. Rowan wrote me a letter after Mr. Smith visited Winnipeg, stating that Mr. Smith had authorized the substitution of rock side for rock bases to catch the toe of the slope as in the sketch in Mr. Rowan's letter; I myself had proposed that to Mr. Rowan before.

1180. Have you the letter here?—No; it is in a large letter book.

1181. What was the first change made in the character of the work; lowering the rock cutting and raising the embankments?—That was in June, 1877; I think the letter was dated 29th June; and we began in July to lower the grades.

1182. That was a complete change in the character of the work?—You cannot call it a change in the character because there was still the same rock cutting, and earth cutting, and trestling to make the line.

1183. But it was doing away with an immense quantity of trestle-work; increasing the rock cutting, and substituting embankments for trestle-work in some places?—I cannot say that it was doing away with an immense quantity of trestling; it was doing away with a certain portion of it; a lowering of two feet on the grade will not cut very much off the timbers; the superstructure is the thing that costs the money, and if you have the same length of superstructure a change in height of the bents from 30 to 35 feet makes little difference in the cost.

By the Chairman :—

1184. In August or September last Mr. Smith went over the line with you, did he not?—Yes, he walked over the line.

1185. At that time you were making up the embankments of solid rock?—Out of the cuttings; certainly.

1186. That was not in accordance with the original plan; there was a change, was there not?—You must remember that these protection walls were a portion of the rock bases—the two outer edges of the rock bases, which were ordered to be put in.

1187. Were you ordered to put that in, in the original contract, or was it a change?—It was a change.

1188. Mr. Smith came there in August or September, and when he went over the Section you were making that change?—Certainly.

1189. He asked you, at that time, under whose instructions you were doing that?—No, Sir; he did not.

By Mr. Haggart :—

1190. Why were you doing it?—Because I was acting under instructions from my superior officer, Mr. Rowan.

1191. You say the first instructions you got were, that Mr. Smith had written?—That was in 1877. Mr. Smith came up and walked over the line in 1873, the next year.

By the Chairman :—

1192. Did he express any surprise that you were doing the work that way?—No.

1193. Did he ask you if you had any authority for it?—No.

1194. Did he ask you if the change had been made under Mr. Rowan's instructions?—No.

1195. Did he ask you anything about it at all?—I don't remember his doing so.

1196. He must have noticed that the work was changed?—He saw it; but I don't remember him passing any remarks about it. He talked as if he understood thoroughly that the work was going on, because I showed him places where there was not sufficient rock to fill in the embankment, and he ordered borrowing—that is, that rock be borrowed to finish them up.

1197. Mr. Rowan tells us that the work is going on in the same way now that it would go on if it was intended to use trestle?—As it would have gone on if the rock bases had been put in. It is not exactly the same, because the contractor

would have made only a portion of the rock bases out of cuttings and left the remainder unfinished.

1198. I want to understand this exactly. Mr. Rowan states that there had been up to this time no change made in the character of the work, and that it is possible now to go on and use the trestle-work, just as if it had been intended from the first to use trestle-work?—The original idea was to haul rock from the cuttings until you made all these water-stretches, no matter how far you had to go over intervening hollows, under which arrangement you would have to go, perhaps, two miles on either side to get rock enough to fill the water-stretches. The present work is carried on so that the rock cuttings close by the stretches are sufficient to make up the banks.

1199. Then you are substituting rock for trestle-work or timber?—No; I would rather say that we are substituting earth for it.

1200. Will you use as much timber as you would have used under the original contract?—Not in using these bases.

1201. Mr. Rowan says you can now take either plan; he gave us to understand that there was no change in the work of construction. I want to know whether, in your opinion, that is so?—You can borrow rock and fill up between the protection walls. If you choose to put in the full rock bases it can be done.

By Mr. Haggart:—

1202. Is there no earth put in between these walls?—In one spot, by Mr. Smith's orders.

1203. Then you would have to dig out that earth in order to put in the rock and make the work the same as originally intended?—There is no earth put in the water yet.

By the Chairman:—

1204. Do you mean to say that you can now go on and put in trestle-work, with the same advantage to the Government and to the contractors as if the intention of the contract had been carried out from the first?—The only difference would be that we would have to borrow rock to make up these rock bases instead of hauling the rock a distance of about two miles, in many cases, from distant cuttings.

By Mr. Haggart:—

1205. Mr. Whitehead, it appears, sees the difficulty in this work; asks for a change and is allowed it?—Yes.

By the Chairman:—

1206. Has Mr. Whitehead, so far as you know, been going on with the work with the idea that he was going to continue the trestle-work?—I do not think so.

1207. Has he prepared for the trestle-work?—I do not think so.

By Mr. Haggart:—

1208. You were the engineer in charge of construction?—Yes.

1209. If you understood that trestle-work was going to be used, would not you, knowing that he had a low price for trestle-work and a high price for rock, have seen that a proportion of the low-priced work was done as well as the high-priced work?—Certainly; one would do that if he had any doubt about the contractor. But there is another thing to be considered: the trestle-work cannot be put up until the rock cuttings are made; you see the rock cuttings may go so far, and if you begin to put up your trestling before they are made you may find that the timber has to be longer and to go farther than you expect; until the rock was taken out we could not get a real estimate of the quantity of timber required for the line.

1210. Are not the rock cuttings made, so that you accomplish what you propose?—A great number of them are.

1211. And the contractor is not doing the trestle-work?—He is not doing the trestle-work.

1212. He knows it will be required?—No; because the question has never been decided; it is in abeyance.

1213. What is in abeyance?—The question whether his proposition will be accepted or not.

1214. When did you learn that it was in abeyance?—It is in abeyance because it was never decided.

1215. This is an important change in the contract; did Mr. Whitehead know it was undecided or did he think it was decided in his favor?—I was told that the Government had never decided it.

1216. Did Mr. Whitehead know that?—I believe so.

1217. Still he went on with the works for six or eight months?—He went on with the work under the original contract, taking out his cuttings, but he omitted to take out this rough trestle-work timber until he knew whether it was needed or not.

1218. You just stated you did not suppose he expected to furnish the timber?—I think he expected that his propositions would be accepted.

1219. You knew he could not furnish the timber?—He could bring it from the United States.

1219a. But, practically, it was impossible to furnish it?—Practically it was impossible.

1220. As a practical man, having charge of an important work, if you had been consulted in the matter would you have recommended that this change be made in the contract without modifying the prices, seeing that the quantities which were high priced were to be increased and those which were low priced were to be reduced; take the earth work for instance, it was 300,000 yards at 37 cents a yard; if the contractor was going to be let off the timber, which was low, and allowed to increase the earth it would make a serious change in the aggregate cost of the work?—I look at it this way: take the earth work, and if he made the proposition which I understand he made, that he would charge no haulage, then I consider it would not have been so bad.

1221. It would not have been so bad?—No; because with haulage of say 13,000 feet it would have cost 50 cents a yard.

1222. But there is no such proposition?—This is the first I knew of there being no such proposition.

1223. Suppose you are acting in the interests of a railway company and a radical change is proposed in the character of the contract, giving the contractor additional work at a high price, and relieving him of work which he could not perform without losing money, would you not require some modification of the contract?—I think there ought to have been.

1224. You would have recommended it yourself?—I would.

1225. This has really added largely to the value of Whitehead's contract; whether it is a profit or not I do not say; but it has relieved him largely?—I think it has relieved him to a certain extent, but I cannot say how much.

1226. To what date is the last estimate made up?—Up to the end of March.

1227. This change added largely to the value of Mr. Whitehead's contract, whether it was profitable or not. This change relieved him very largely?—To a certain extent, I think it has relieved him.

1228. The works are still going on?—Yes.

1229. Up to what time is the last estimate?—Up to the end of March.

By Mr. Haggart :

1230. That is your estimate of what is required to finish the work?—It is based on my calculation.

1231. Do you think that sum will finish the work?—I think so; but it is impossible to say. No man can yet tell what it will cost, we can not tell how much of the cuttings will be earth and how much rock. If you take the different cross-sections of cuttings, you will find the rock goes right down to the grading, one-half being rock and the other half earth. Then again, there are three feet of earth on the north side of the line, and six or seven feet on the other side, and then the slopes.

1232. Who surveyed the line between English River and Keewatin?—The first line was run by Mr. Jarvis.

1233. Did you do any of that work?—No, I did not.

By Mr. Bergin :—

1234. Did you know either from conversation with Mr. Whitehead or with anybody else that the first change made in the character of the work was made upon the recommendation of Mr. Whitehead, or after communication by Mr. Whitehead with somebody here at Ottawa?—I don't know whether Mr. Whitehead had communication with Ottawa or not; but it was talked over with Mr. Mackenzie.

1235. Before the change was made?—Before there was any change. There is no change actually except as regards protection walls—the difference between protection walls and rock bases.

1236. I am speaking of the first change?—What do you call the first change?

1237. You said there was a change in the grades, improving them?—That was all settled in the head office here; I was sent the figures and I acted upon them, and until I got those grades it was impossible for me to form any estimate at all of what the work would actually cost.

By Mr. Mackenzie :—

1238. I understand you to say that so far as the whole of the trestle intended to be built is concerned, no part of it has been built in any other way?—Except in one place.

1239. What is the extent of that one place?—Well, they are running in sand just now with the steam shovel; they are running in about 20,000 yards a month.

1240. Since when?—At the present time they will be running at that amount, but during the winter it was only four, or five thousand a month; they began in September or October to make the filling, speaking from memory.

By the Chairman :—

1241-50. As he is going on with the work in that way it does not look as if there was any idea, on the part of Mr. Whitehead, that the change was not made?—This I had special instructions to do from Mr. Rowan, and I understand Mr. Rowan received instructions from Mr. Smith.

By Mr. Mackenzie :—

1251. Mr. Rowan states in his evidence that there has been no change made, except in the rock sides through water?—And in this one case.

By Mr. Haggart :—

1252. How many yards of earth is there extra on that simple change?—There would be about 180,000 yards.

1253. Are there any other changes going on in which a steam shovel, or anything else is employed?—No, except that they have built a rough trestling over Cross Lake intending to fill it up with the steam shovel.

1254. They do intend to fill it?—If they had not so intended they would not have built it.

1255. If they fill it, that will be another complete change?—Yes, certainly.

1256. What will that involve of a change?—I think 160,000 yards, or something like that; 155,000 or 160,000.

1257. Then the changes will involve nearly 400,000 yards of earth?—Yes.

HENRY CARRE.

MARCUS SMITH called and further examined :—

By the Chairman :—

1258. I asked you in your previous examination in regard to the quantity of rock already executed, and the quantity still to be done, and you said, "That was accounted for by the change in the manner of completing the line across valleys and ravines. There is a large amount of trestle-work in the original estimate for making up the gaps, but that was changed to rock and earth." That is something like what Mr. Carre has just been saying. You were then asked, "Was that change made

under the sanction of the head office, or under the Chief Engineer?" to which you replied, "All I know about it is contained in the papers I produce. When I went out to inspect the works last August or September, I went over the whole section, and the resident engineer, Mr. Carre, was making up the embankments of solid earth and rock." Did you authorize that?—No, I did not, I may say there were very few works being done at that time. The principal thing that was being done at that time was the distribution of the rock at the foot of the slopes, for protecting the earth-work.

1259. What changes in respect of Section 15 have you authorized?—If the Committee will allow me I will give a short narrative. The first time I had any connection with the works was in the fall of 1877, when I inspected several of them. I failed to see those on Section 15, because the steamer appointed to meet me did not come. However, the contractors' engineer, Mr. Ruttan, and Mr. Rowan came to me, I had then just one hour before leaving for Ottawa. They submitted a proposition to make some change for the length of a mile and a quarter, and said that the profile showed it was hardly practicable for the contractor to go on unless we would allow this change to be made.

1260. Where was that point, at the junction of the two lines?—No; it was within about four miles of Rat Portage.

1261. You will perceive there is a large hollow or valley to be filled up there?—According to the original plan it would have taken all the rock cuttings for a mile back to have covered the bottom up to water level to set the trestle on.

1262. That is assuming the work to have been carried out with trestle?—The contractor would have had to put in the trestle-work on a very low embankment, 4 or 5 feet high, because he would not be allowed to take from the rock required for other purposes. We decided on a different distribution of rock. Instead of making solid rock embankments across the whole series of valleys up to water level, it is proposed to make two narrow embankments, one for each side of the future rock embankments which were to be made, and that diminishes very much the quantity of rock required, so that it enables the contractor to fill up the shallow valleys with rock and make it solid rock throughout. That did not require any more rock to complete; in fact, it was on the whole economical, although a slight departure from the trestle-work provided for in the contract.

1263. What distance did that change cover?—That covered one mile and a quarter. The whistle of the steamboat was blowing, and it was the last of the season, and I, therefore, had no time to give a written approval for this change, but it seemed so reasonable and would involve little if any additional cost, that I gave a verbal approval of it; at the same time I stated distinctly to Mr. Rowan that he was not to use the approval of this single portion for any other part of the line without submitting to me a written proposition, with plans and profiles, and there is where Mr. Rowan makes a mistake in his evidence. I gave no instructions to adopt the system except in that particular case. When I returned to Ottawa I communicated this verbally to the Minister of Public Works, that I had given this change my sanction without first submitting it to the Department, giving my reasons for doing so, at the same time stating that for the future sanction would not be given without the proposed change being first submitted to the Department.

1264. Anything further?—I heard nothing further then till 5th March, in the year following—1878.

1265. This was in the autumn of 1877?—Yes; in the autumn of 1877; just at the beginning of November or on the last day of October, or about that time; I was anxious to return by the last boat or I would have been frozen in. I heard nothing more about any change until 5th March, 1878; Mr. Rowan then submitted to me a very long report on the subject of a general change in the character of the works, substituting earth embankments for trestle-work in every instance.

1266. Was that report similar to the letter which went to Mr. Sandford Fleming?—There was a letter accompanying that report, which is the letter he alludes to; at that time Parliament was in Session; I was exceedingly busy, and there were

important papers before me. For some weeks I had not time to look at it, but when I did glance at it, I saw on the face of it, before I had gone through many pages, that it was entirely theoretical, and that there was far too little data for me to work on it. I did not submit a report on it to the Department. There was, in fact, not sufficient information to enable me to consider the matter and submit it to the Department. About that time Mr. Fleming arrived from England; and it appears from his evidence—I do not know it from my personal knowledge—that Mr. Rowan submitted a report, not the report he submitted to me, but a report of similar import, to Mr. Fleming.

1267. Then you took no notice of the report to you?—In fact it made so little impression on me that in giving my evidence before I forgot it had been before me; and it was recalled to my memory by seeing Mr. Rowan's letter.

1268. He submitted a report to Mr. Fleming of the same character?—Of the same import; I did not see it then, and did not know he had submitted it. I believe he got some further information from the resident Engineer before he submitted it. As I said before I did not know he had submitted it, and I did not know Mr. Fleming had recommended its adoption to the Department until I arrived on the works in the fall of 1878, at the end of August or beginning of September. When I arrived on the works I went over the whole section in company with Mr. Carre, the resident Engineer, and Mr. Ruttan, the contractor's Engineer. I took notes of every important work that was being done and I found that the distribution of the rock in crossing water-ways was very similar to that I had recommended for that mile and a quarter of the section.

1269. You did not recommend it for more than that mile and a quarter?—I did not; at the same time I must say I thought then as I think now, that it was a most economical distribution of the rock, so I did not interfere except at certain points.

1270. Do you consider that you sanctioned it?—Yes; it was done; I will say that I would sanction it now; because it does not necessarily imply that the trestle-work is to be abandoned; it is a protection for the foot of the embankment whenever the embankment should be made, but it does not necessarily imply that the embankment should be gone on with at once.

1271. That was sanctioning a very important change in the construction?—I don't think it was; it was not doing away with the trestle-work, and in the contract there was no mention of how the rock was to be distributed; it was simply a practicable change in the distribution of the rock, and not necessarily a change in the character of the work.

By Mr. Bergin:—

1272. Was the change injurious to the contractor?—I don't think it will affect him much.

1273. He will not lose a great deal of money by it?—If the trestle-work was being put in he would lose money on it.

By the Chairman:—

1274. Is that the report you made?—It is a memorandum I made in answer to Mr. Fleming's letter. I found them; however, making embankments in dry valleys where originally it was intended to be trestle-work. I gave no authority for that; there was not, as I have said, much done when I arrived at Winnipeg; I asked by what authority it had been done. There were eight or nine points where they were making embankments, and where it was originally intended to have trestle-work, and I understood from Mr. Rowan and from the contractor's Engineer that some of those had been commenced before I saw the work in 1877,—that Mr. Fleming had stated that wherever they could find earth he would prefer earth embankments.

1275. Who stated that?—The contractor's Engineer,—that Mr. Rowan had given them instructions where they could find earth; that Mr. Fleming would prefer earth embankments.

1276. How did that statement come from Mr. Ruttan?—Mr. Ruttan was with me, Mr. Rowan was not present; I did not see him till I arrived in Winnipeg. Mr.

Ruttan told me he had instructions from Mr. Rowan prior to my visit in 1878 that Mr. Fleming had instructed him, wherever he could get earth, that he would prefer earth embankments to be made. But up to this time there had been very little, if any, such work done, for the very good reason that the contractor could not get his plant forward. He was making preparations (he had a steam shovel on the way) to commence work at Lake Deception. He had made no preparations for going on with the trestle-work. The impression among the contractors was, that the trestle-work had been abandoned.

1278. Had you any conversation with Mr. Whitehead about it?—Not much about that.

1278. About the contract generally?—Not much about the contract with Mr. Whitehead. He was desirous to have the change made. As an engineer, if it could be done by any means without violating the contract. I would prefer it in many instances.

1279. Were you aware of the reasons which induced the Government to finally adopt trestle-work?—No.

1280. Then I understand that the changes you have recommended you have stated?—I state distinctly that when I went through the section; besides the different distribution of the rock over water stretches, which I think is economical which ever way the work is carried out. Embankments were being made at several points where trestle-work was originally adopted. There was not much done, there could not be much done, because there were only two months in which to do it, that is from the time Mr. Rowan went back there to the time I went over the work; but everything was in preparation to carry out the substitution of earth for trestle-work, altogether very little was done. I asked Mr. Rowan the reason for the change. He then referred me to Mr. Fleming's recommendation to the Department, which I had not seen or heard of. I telegraphed to Ottawa for that, and got a copy of it on 19th September. Mr. Rowan stated to me that Mr. Fleming was so well assured the recommendation would be approved that he (Mr. Fleming) had given Mr. Rowan verbal instructions to go on with the work in accordance therewith; that was so far sufficient for me, and I had very little reason to doubt it. There is really no responsibility in signing certificates at the office; it is simply saying that there is no manipulating of the quantities in the office; but I signed the certificates under Mr. Fleming's directions, and I have no further responsibility than I have stated.

1281. It is stated you made estimates and recommended that an advance should be made for the purchase of plant?—That was not an estimate.

1282. It is said that your last estimates have been cut down and only about half the amount you recommended was paid?—That is a different thing altogether; the contractor was at a very large outlay in getting plant and in getting provisions and supplies forwarded, before the rails were laid in Section 14, to his contract; he was behind-hand in money matters and he wanted the Government to advance him a certain amount on his plant.

1283. That was at the beginning of the year?—No; that was on my return last fall. I reported at that time on Mr. Whitehead's plant; he was disposing of his plant and placing it in such a manner that he would be ready, as he is now ready, to go on with the works in the most efficient, economical and rapid manner, and I gave an estimate of what the plant was worth.

1284. How much was that?—I don't remember just now, but something like \$50,000 or \$60,000. I believe he asked \$100,000: I don't recollect that I recommended any sum; I simply stated that Mr. Whitehead was certainly in a good position to go on with his work, and that I did not see there was any danger in the Government advancing a certain amount and taking the plant as security.

By Mr. Haggart:—

1285. Do you know whether the usual ten per cent, has been retained from him on the work?—I believe it has not; most of it, a good portion of it, has been paid up, I understand.

1286. I suppose he had to deposit a certain amount of security when he got the work?—Yes.

1287. Has it been returned to him?—Not to my knowledge.

By Mr. Mackenzie :—

1288. I see by Mr. Fleming's evidence, that you recommended an advance of \$100,000 on the plant?—I do not think I did.

1289. And that he limited his recommendation to \$40,000?—I do not think I recommended \$100,000; \$100,000 was what he asked for, but as far as my recollection goes, I do not know that I recommended any definite sum; still, I may be wrong.

By Mr. Haggart :—

1290. How do the prices of the works on the whole of this road compare with the cost of the same works on the Intercolonial; are they higher or lower?—This line has cost very much more; and the prices for the same items on this road are much higher than they were on the Intercolonial.

1291. Much higher?—Considerably higher; take earth-work, for instance; the Intercolonial works, you will observe, were let in a lump sum, but in order to pay the contractors, arbitrary prices had to be set as the value of certain classes of work, so as to arrive at the value of the work done in proportion to the whole sum. Earth-work on the Intercolonial runs as low as from 17 cents to 22 cents; the earth-work on three sections of the Pacific Railway runs at from 22 to 37 cents.

1292. Where the work is let in a schedule of prices instead of by the lump sum the quantities are frequently increased, and on this road they are in some sections doubled?—They are increased very much—doubled in some cases. It is to the interest of the contractor as well as the Government to keep the quantities down when the work is let by lump sum, and I have no reason to doubt that if the work had been let by the lump sum, the contractor would not have buried thousands of yards in the muskegs; he would have either made a deviation, or put in corduroy.

By Mr. Mackenzie :—

1293. But you had the right to order corduroy there if you chose?—The Engineer had the right, certainly.

1294. Why did you not do it?—There was nothing in the estimate for it; it was not in the bill of works; there was no price for it.

1295. Was that the reason you did not order it; why didn't you order it?—The works were nearly completed when first I saw them.

1296. When did you first see them?—I first saw them in the fall of 1877.

1297. Was it in 1877, that you were first on Section 14?—I think so.

1298. And was the muskeg filled at that time?—It was partly filled.

1299. Did you ever suggest to the Department the desirability of making a change?—I did not suggest a change to the Department.

1300. Nor to the local Engineer, either?—No; the thing was too far advanced, and I was not aware that the quantities were being so far exceeded.

1301. Did you ever, until to-day, suggest that that might have been done?—The work was too far advanced for me to make any such suggestion.

1302. How far advanced was it?—The banks were made partly up; all the way through they were more or less made up, little short gaps being left here and there; besides that, I was not aware that the quantities were being so far exceeded, or that the muskegs were so deep.

1303. Until I called your attention to it?—Until you called my attention to it.

MARCUS SMITH.

The Sub-Committee then adjourned.

WEDNESDAY, 7th May, 1879.

Sub-Committee met—Mr. PLUMB in the Chair.

Mr. SANDFORD FLEMING called and further examined.

By the Chairman:—

1304. You produced a paper here, in which several of the tenders for No. 15 were moneyed out; have you moneyed out the two lower tenders which were not accepted, and which you had not moneyed out before?—Would you allow me to ask to what statement you refer?

1305. I have reference to the moneying out of the tenders of J. A. Green, Talbot & Jones, Hingston & Farewell, to show that Sutton & Thompson's contract would have been the lowest under any circumstances, I ask you that two others, Macdonald & Kane's and Martin & Charlton's, be moneyed out for the purpose of comparison?—I have not them with me.

1306. I see that in the comparison you add \$82,000 for the hauling of earth to contracts other than Whitehead's?—Yes.

1307. But I asked you if the statements were all made upon the same basis?—These statements are made up precisely as I explained to you before. I informed you that Mr. Whitehead offered to do the earth-work without charging haul; there is no evidence to show that the others made the same offer; I embrace, therefore, in the other offers a sum for the cost of hauling material. I also informed you that in one of the tenders there was evidently a clerical error: a tenderer of the name of Hingston had put clearing at twenty cents an acre. I assumed that the price should have been \$20, and I took the liberty of making the correction.

1308. We have no evidence before us to show that Mr. Whitehead did propose to have no allowance for haul?—I will show you the evidence in his letter; it is part of his proposal.

1309. Show us it in the letter?—(Written reads from printed copy in Mr. Marcus Smith's evidence) "If the Government will consent to do away with the trestle-work altogether, and permit me to complete the banks with clay and sand, I will agree to find the necessary material required to do this, which has to be procured from borrowing pits.

"And I will make up the embankments through water with two rock banks carried up to three feet above high water mark, and having a berm of two feet outside the foot of the earth slope, on the plan suggested by you, as in the accompanying sketch, without extra charge." I see nothing about it in that; it cannot be a correct copy of the letter.

By Mr. Mackenzie:—

1310. He says he will do the earth-work without extra charge; does that refer to the haul?—No; I am just informed that this letter has been compared with the original, and it is not a true copy.

1311. It says, "without extra charge;" that might mean "haul?"—I think it refers to the haul, and I think you will find that the words "extra charge" are "extra haul" in the original. The impression that, in the letter, he offers to do the work without extra haul was, undoubtedly on my mind, when I made my report upon it, and if Mr. Whitehead's letter did not explicitly say there was to be no charge for haul, I am perfectly certain I would not have reported as I did to the Government. I shall send for the original letter.

By the Chairman:—

1312. A matter like that you would have in writing?—Here it is in writing in my report.

1313. I mean the first proposition, the proposition from Mr. Whitehead would have been in writing?—I understand that it was in writing.

1314. I observe, in the comparative statement, that the bridge over the Winnipeg River is reckoned in the various tenders, but not in Whitehead's?—You will see it in Whitehead's as bridge masonry, 2,400 yards; rip-rap, 1,000 yards.

1315. Item 17 $\frac{1}{2}$, culverts, is not in the original tender?—No; because this is a calculation to show the amount that the increased work would come to, and you could not fill up an embankment without putting in culverts or tunnels; this is due to the change from trestle to embankment.

1316. But as there were no tenders for that on the other contracts, how could you compare it with the one that is accepted?—This is an item of \$70 000, estimated by Mr. Rowan, for the masonry in the structures under Mr. Whitehead's tender, and he has made a proportionate allowance for the same work under the other tenders.

1317. Yes; but the other tenders were not made on that principle?—It would be impossible to make a comparison between one and the other without making an allowance for that work; it would not be a fair comparison if it was added in one case and not in the other.

By Mr. Bergin:—

1318. We wish you to give us, as if they were new tenders for each of the works, the amounts at the rates at which they were tendered for on each item of the bill of works, which would show whether Sutton, Thompson & Whitehead's tender was lower than the tenders which at that time were higher?—Here a new class of work comes in, masonry, culverts and embankments.

1319. We are not asking for the new class of work, but for the items in the original bill of works at the prices?—I have given you all the items in the original bill of works.

1320. We wanted the items calculated according to Mr. Whitehead's prices?—They are here so calculated.

1321. We do not so understand it?—I have explained it, but you will not accept my explanation; I will repeat it if the Committee wish.

1322. I desire an explanation?—In making embankments with trestle-work, it is necessary to provide for the passage of water, either by tunnels through rock, if there be any, or by masonry culverts. Mr. Rowan estimated a certain quantity of masonry, which does not seem to be given here, on the culverts that were necessary under Mr. Whitehead's tender, amounting in all to \$70,000. In making a comparison of the tenders, it is necessary to add something to the other tenders as well as to that one; they could not make solid rock embankments without also making provision for the water. We have taken the cost of the masonry in each case and added or deducted; at all events, made a proper allowance in that way. In tenders Nos. 1 and 2, Mr. Whitehead's price for masonry is \$11 a yard; Mr. Green's price is \$12 a yard. The allowance is one-eleventh more in the case of Mr. Green than of Mr. Whitehead.

1323. Is any work done?—No; it is simply an estimate of the whole which will be necessary if the work is done in that way.

1324. What is the difference in price for earthwork between Mr. Green and Mr. Whitehead?—The price of earth under Mr. Whitehead's tender is 37 cents, and under Mr. Green's, 35 cents.

1325. And the prices of solid rock?—Under Mr. Whitehead's tender, \$2.75; under Mr. Green's, \$2.60.

1326. The prices of loose rock?—Under Mr. Whitehead's tender, \$1.75; under Mr. Green's, \$1.

1327. Have you calculated those amounts?—It has been done for me.

1328. What is the difference between the two tenders?—Making all allowances referred to.

1329. Without those allowances you have just referred to,—without the tunnel and making provision for water,—what is the amount of these tenders as they originally stood?—Without that, you have to take \$70,000 off one and \$75,000 off the other. Of course, if you take off the haul, it will be so much less in the one case. (Witness at this point produced the original letter, dated 22nd May, and read the paragraph containing Mr. Whitehead's proposal, not to charge for "extra haul," as follows: "If the Government consent to do away with the trestle-work altogether, and permit me to complete the banks with clay and sand, I will agree to find the neces-

sary material at my present price per cubic yard for earthwork, and make no charge for extra haul for any of the material required to do this, which has to be procured from borrowing pits.")

SANDFORD FLEMING.

Mr. MARCUS SMITH, re-called and further examined.

By the Chairman:—

1330. Did you produce that letter (copy of letter, dated 22nd May)?—I do not know whether that is the copy I brought; it was copied by the clerks in the office.

1331. Who copied it?—I think I got it from Mr. Smellie. I do not know who furnished it; I think I asked Mr. Smellie's assistant for the original.

By Mr. Mackenzie:—

1332. Cannot you tell the handwriting of the copy?—It is written, I think, by some extra clerks; it has not been made by the ordinary clerks.

1333. By whose orders was it copied?—I asked Mr. Smellie for a copy.

1334. And who gave it you?—I suppose it was sent in to me by Mr. Smellie.

Mr. W. B. SMELLIE, called and examined.

By Mr. Mackenzie:—

1335. Do you know anything about the copy, Mr. Smellie?—No.

1336. Did you order it to be made?—No.

By Mr. Bergin:—

1337. Was the original letter in your custody?—No.

1338. In whose custody was it?—In the registry of the Department.

Mr. MARCUS SMITH said: I sent down to the clerks for copies; they were sent to me, but who wrote them I do not know. I sent a verbal message to get the papers for me.

By Mr. Caron:—

1339. It should be an easy matter to ascertain who gave the order?—I very likely asked myself; I do not know who did it; extra clerks are employed, and there is difficulty in identifying the hand writing. These copies are made in a hurry; one for the Senate and one for this Committee. I am told that the Senate copy is correct. Both copies were made from the same document; there may have been a mistake in the copy.

Mr. FLEMING's examination resumed.

By Mr. Haggart:—

1340. Mr. Whitehead's letter says: "If the Government consent to do away with the trestle-work altogether and permit me to complete the banks with clay and sand, I will agree to find the necessary material at my present price per cubic yard for earth work and make no charge for extra haul for any of the material required to do this, which has to be procured from borrowing pits." Then this is only on condition that the trestle-work will be done away with altogether?—I am told there was no change authorized in the original contract; none authorized by the Department.

1341. Then, I suppose, if Mr. Whitehead should put in an estimate for extra haul on any of the works, he would be entitled to be paid?—He would be entitled to be paid for everything done under the contract.

By the Chairman:—

1342. Whatever he is doing is under the contract?—Yes; nothing is done except under the contract.

1343. Then, there has been no change whatever in the work as contracted for?—Clearly not; at first I thought differently; when before the Committee of the Senate I at first thought so. I may remark that there is some slight change made, under

Mr. Smith's orders, which is a little different from the contract; stone walls have been put in in place of doing the work in some other way.

1344. Does that materially alter the contract?—It does not materially alter the contract.

By Mr. Haggart.

1345. Mr. Carre says there is one filling of nearly 200,000 yards and trestle-work laid to cross Lake Deception in preparation for a large filling of nearly 200,000 yards?—That is on another section altogether.

1346. The rough trestle is put up by the contractor across Cross Lake?—That is on Section 14.

1347. It is for crossing at Cross Lake?—That is his own business and not contract work.

By Mr. Carre.

1348. Will he be paid for it?—No.

By Mr. Haggart.

1349. It is a change from the original contract?—All I know is that there is no change authorized by the Department.

1350. Mr. Carre says that these changes were not in the original contract; when I asked him what one of them involved he said the quantity was 200,000 yards; he said there was a trestle-work filling across Cross Lake?—Mr. Carre has just come down; he knows better than I do about that.

Mr. CARRE, called and further examined:—

By Mr. Bergin.

1351. You told us yesterday that the character of the work had been changed by directions from Ottawa?—That was a change in the grades; a change in the grades was ordered, and if that is called a change in the character of the work, then there has been a change in the character of the work.

By the Chairman.

1352. The grades were raised from three to four feet, which reduced the rock-cutting and increased the filling?—That was in 1875.

1353. Then there has been a change in respect to the rock sides?—Yes.

1354. You say that that plan has been adopted throughout, and that is a general change in the character of the work?—That is the general plan adopted now.

1355. Mr. Smith says he never authorized that change, except on one point for one and a quarter miles?—Did he mention where.

1356. He mentioned the place; he said distinctly that the change involved about one and a quarter miles; that he directed Mr. Rowan to make no other change, and that he reported it to the Department in the Autumn of 1877?—I am aware of his giving no special order for any particular place; it was a general order, as I understood it; I understood that from a letter from Mr. Rowan, my superior.

By Mr. Oliver.

1357. Did you understand Mr. Smith to authorize the carrying out of the recommendation made by Mr. Whitehead to the Department—that of making all the crossings of solid embankment instead of trestle-work?—Yes; for the water stretches. When Mr. Smith walked over the work with me, he never objected in any way to, or asked any question about, the filling in of the protection walls; and I consider the granting of the protection walls virtually granted the earth-filling, because we would have to put in either filling between the walls of rock for the trestling or we would have to put in pile foundations or crib foundations, something or other to put the trestling on; so I considered granting the protection walls virtually granted the earth-filling.

1358. Then you understood from Mr. Smith that the same mode of construction was to be carried out on all the water-crossings on this Section 15?—I will tell you how many were going on at the time; there were five cases in which it was going on at the time. I received no instructions to stop the work, and was never asked why I was doing it so.

By the Chairman :—

1359. Were any finished when Mr. Smith went over the line?—There were five, under construction, and the third one was finished.

1360. He had not seen it till he went over the work?—No, he walked over the work and saw it, and never asked why it had been done or under whose instructions it was done.

1361. Who gave the instructions?—I said I acted under Mr. Rowan's instructions.

By Mr. Haggart :—

1362. When did you commence to make these changes?—November, 1877, after receiving instructions; I began to work immediately after receiving the instructions from Rowan.

1363. But Mr. Fleming's letter recommending it to the Department was not written till the following May?—That letter recommends full earth-banks for land stretches without haul. Which letter are you referring to?

1364. I am referring to the letter from Mr. Whitehead proposing the changes in November, 1877; you say that the changes were made then?—Those protection walls were commenced then, but doing the protection walls and doing the whole contract with earth are two different things; it was to do the whole contract with earth that Mr. Whitehead proposed.

1365. On Mr. Whitehead's letter the protection walls are mentioned; the first the Department heard of them at Ottawa is the recommendation of Mr. Fleming's, in the spring of 1878; but you say they were going on in the fall of 1877?—Yes.

1366. Then, Mr. Whitehead applies to the Department in November, 1877, to make the changes which he proposes, among which are the protection walls you speak about?—These protection walls are a portion of the whole scheme, and he mentions the whole scheme in his letter; but, previous to that letter being written, Mr. Smith, as I understand it, gave instructions to Mr. Rowan to allow the protection walls to be put in.

1367. That was in November, 1877?—In November, 1877.

1368. Why would Mr. Rowan ask the Department for authority to make the change if he had the authority already?—I do not know anything about what went on in the Department; I was in the woods, and had to carry out the instructions sent to me.

MR. SANDFORD FLEMING, recalled and further examined :—

By Mr. Mackenzie :—

1369. This letter refers to the water part altogether. Mr. Whitehead says, "And I will make up the embankments through water with two rock banks carried up to three feet above high water-mark, and having a berm of two feet outside the foot of the earth slope, on the plan suggested by you, as in the accompanying sketch, without extra charge." That appears to be intended to refer to embankments chiefly through water?—There is a great deal of water.

1370. Some portions appear to have been done before that without any special authority?—I think there was authority given by Mr. Smith; not from the Department, but from Mr. Smith.

1371. I mean special authority from the Department?—No; but special authority from Mr. Smith; I think Mr. Rowan says he has a letter to that effect.

1372. You never gave any order yourself?—None, whatever.

1373. Were you aware this was being done?—I was not aware this was being done.

MR. J. H. ROWAN re-called :—

1374. To the Chairman,—That letter by Mr. Whitehead was written after an interview between Mr. Whitehead, Mr. Ruttan, his engineer, Mr. Marcus Smith, and

myself. Before this interview I had conferred with Mr. Smith on the subject of putting in rock sides in the water-stretches. Mr. Smith, as I understood it, approved of that plan; and not for any one lake in particular, because what I submitted was a general plan for all the lakes; and if that plan holds good for one lake it holds good in all. I was not aware before that Mr. Smith specified some place about a mile and a quarter across; there is no such lake; that is about the whole length of them. This discussion went on between Mr. Smith and myself, and as a letter which I will produce shows the making of rock-sides across water-stretches was approved. Then Mr. Whitehead and his engineer came on the scene and made a further proposition, namely, that the whole earth-work on the contract should be put in and no trestle-work should be used at all. Mr. Smith said, "Very well, I will submit the whole matter to the Government when I go to Ottawa," and he started away. A day or two afterwards Mr. Whitehead came to me and asked what was going to be done. I said, "Nothing can be done until the matter is submitted to the Department; you write a letter to me on the subject." He asked me what was to be written. I said, "Make your offer to put in the earth; but specify at the end what has been already approved." That is how Mr. Whitehead's letter came to be written. Mr. Whitehead and his engineer can confirm that.

By Mr Haggart:—

1375. I understand you have some letters to produce; you had better produce them?—I have already put in two letters; one of them is my letter of instruction to Mr. Carre, the division engineer, the day after Mr. Smith left; the other is the one I wrote to Mr. Smith on 5th March, 1878, calling his attention to what I had ordered. The next letter I have to submit is one dated Winnipeg, December 22, 1877, addressed to Mr. Carre by myself. I would like to ask the Committee to observe that this is written on 22nd December, before I had come down to Ottawa, because it shows that at that time, and before I came down to Ottawa, there was no intention of abandoning the trestle-work.

(Copy.)

WINNIPEG, 22nd December, 1877.

DEAR SIR,—I herewith enclose to you tracings of the superstructure and bents for 10 ft., 20 ft., 30 ft., 40 ft., 50 ft., and 65 ft. banks, and also a special trestle for station 1742 x 13, also bills of iron and timber for the same.

I have not taken out quantities for the latter, knowing you could do that yourself, having the size and dimensions of timber and iron shown in the others; and as this one will furnish you with my ideas as to the way in which a bent is to be adapted to the ground on which it is to be built, I have not thought it necessary to forward designs for bents at stations 573 x 18 x 30, as, not knowing the depth to which it may be necessary to go for the foundation, the design I might furnish would require subsequent modification to suit the circumstances.

I have a letter before me since the 6th November, from the contractors, offering to make up all the banks, for which there is not sufficient rock, with other material, without making any charge for "extra haul," if they are permitted to abandon the trestle-work. Before, however, I can submit this to the Department I must be in a position to submit an approximate estimate of the cost of both ways of doing the work; hence my letter to you of the 3rd November.

Mr. Marcus Smith having approved of the plan of making the banks across water-stretches, with rock sides to be filled in with earth and sand, these are now eliminated from the calculation for trestle-work; and I shall be obliged by your letting me have an approximate estimate of the other portions at the very earliest practicable date. The object of such estimate being the respective cost of filling in the opening in the banks, for which there is now no material, in the first place with trestle-work, to be subsequently filled in with earth and sand; and the cost if now filled in with those materials at the contract price, the trestle-work being abandoned either altogether, or as far as practicable.

I may here call your attention to the facts that while it will be necessary in all cases to have "the superstructure" of the trestle-work made of the best "square timber," a considerable portion of the timber to be used in the "bents" may be "round timber," only squared at the points, mortices and tenons, thereby materially reducing the cost.

What you say in reference to making the rockside banks is perfectly correct, if made during the winter through the ice. The "top width" at three feet above high water level might be reduced to four feet, but this is the least they should be; and three or at least two feet of this should be outside the line where the foot of the earth bank will come.

From what we decided, when together, in reference to the structures on the eastern end of this section will, I should think, enable you to determine what will be necessary in that respect on the western end.

The eastern end of Contract 14 has been relocated to suit the grade, as at present laid down, on the western end of Contract 15; but should you find it necessary to lower your grade, that on 14 can be made to conform to it by introducing a few hundred feet of level on the eastern end of 14. The embankment on the eastern end of that section will still be heavy, and there will be considerably more rock-cutting than on the old location.

I quite agree with your suggestion in reference to small box-culverts, and am endeavoring to get the contractors to give me something like a reasonable price for this class of work. When in Ottawa, I shall consult with Mr. Smith on the subject. If the contractors will not give a reasonable price, I should advise that we be permitted to make a bend in our tunnels and extend their length so as to reduce the amount of open cutting at the ends.

As regards the question of "loose rock," there has, as you say, been a good deal of talk on the subject. When Mr. Smith was last here, I spoke to him on the subject, in presence of Mr. Thompson, C.E., and he then seemed to approve the course which Mr. Thompson had followed in the matter. I, therefore, think you had better follow the same course, which is this: Whenever there is any material of this class to be removed from a cutting, visit the place yourself and determine what percentage of the cut shall be returned as "loose rock." Exercising your own judgment as to what may fairly be classed under this head, in contradistinction to "earth," so that justice may be done as between the Government and the contractors.

Owing to the uncertainty as to the depth at which the bottoms of trestles would be placed below the surface of the ground, in consequence of so large a portion of Contract 15 being over rock, the bents up to 40 feet banks were made to rest on surface of ground; those, however, for 50 and 65 feet bank are shown as 5 feet below the surface, as called for in the specification.

Truly yours,

(Signed) JAMES H. ROWAN.

P.S.—I enclose you a copy of a letter I have addressed to Mr. Nixon, on the subject of Mr. Watters' remains, in order that you may know what I have done in the matter.—J. H. R.

H. CARRE, Esq.,
Division Engineer, Contract 15, C.P.R.

Mr. CARRE re-called.

By the Chairman:—

1376. Did you receive this letter, Mr. Carre?—Yes, I did.

1377. Do you know it to be an exact copy?—I believe it is, but I have the original here.

Mr. ROWAN recalled.

To the Chairman:—

1378. Here is a letter of 18th September, 1878, addressed to Mr. Marcus Smith:

(Copy.)

WINNIPEG, 18th September, 1878.

SIR,—You are aware that the Engineer-in-Chief recommended that the water-stretches on Contract 15 should be filled in with a base of rock taken from the cuttings, to be carried up to a level of three feet over high water mark, and of sufficient width to carry on earth embankment between that level and grade; the latter to be put in at some subsequent period, the voids, in the mean time, being traversed by trestle-work of timber.

At the time this was recommended and the work let, the cross-sections had not been taken, and it was supposed that very little earth could be obtained on the contract.

At a subsequent date, when the cross-sections were completed and further examination under more favorable circumstances had demonstrated that a considerable quantity of earth could be obtained, it became evident that to complete the banks in the manner proposed would retard the work, as the cuttings having been reduced (while the banks were increased), in order to lessen expense, the rock required to make up the banks in the manner proposed would have to be hauled from considerable distance, which would increase the cost by the item "extra haul."

I, therefore, when you were here last October, submitted a plan to you, whereby the work could be expedited, the cost of these banks reduced, and the rock taken from the cuttings used to greater advantage. This plan you were pleased to approve, and I immediately wrote, 3rd November, 1877, to the Division Engineer, instructing him to that effect. Shortly afterwards the contractor submitted a proposition in writing, offering to make up all the banks on the contract for which there was not sufficient rock, with earth, at his contract rate, 37 cents, and without charge for "extra haul," he to find the material where he could, thus doing away with all trestle-work.

This proposition I submitted to you, with a report, on the 5th March last, recommending its adoption. I also, on the 23th January last, called your attention to a saving which could be effected, by the substitution of permanent structures at certain points.

Not having received any acknowledgment of these communications, I made a further report, 22nd May, 1878, on the subject, to the Engineer-in-Chief, after his arrival from England. The work is progressing rapidly. It is important that some decision should be arrived at in reference to these questions, and that I should be instructed accordingly. You have now passed over the whole contract. I desire, therefore, to bring this matter again under your notice while here, so that I, as well as the Division Engineer, who is at present in town for that purpose, can furnish you with any additional information on the subject which you may require.

I am, sir, your obedient servant,

(Signed)

JAMES H. ROWAN.

MARCUS SMITH, Esq.,

Acting-Engineer-in-Chief.

I desire to put this letter of 3rd November before the Committee. Extracts from it appear in the letter of 5th March, but I desire to make the story complete by putting in the whole letter:—

WINNIPEG, 3rd November.

DEAR SIR,—Mr. Whitehead is anxious to submit a proposition to the Government, whereby he will be permitted to make up all the embankments on Contract 15, with earth or sand filling in lieu of trestle-work.

He, together with his engineer (Mr. Ruttan), had a short interview with Mr. Smith on the subject yesterday, just as he was leaving. Mr. S. seemed to favor the proposal; but, before submitting it to the Government, requires some more detailed information on the subject, made up under the following heads, giving the quantities and cost as nearly as possible:—

- 1st. The cost of completing the line according to the present design.
- 2nd. The cost of same substituting earth or sand filling, instead of trestle-work.
- 3rd. Cost of completing line as at present contemplated and subsequent filling in of trestle portion with earth or sand.

Note.—All items, such as masonry, bridging, and stream tunnels, &c., &c., which would be common to all three plans, may be disregarded in the calculations, or, better still, given in a bulk sum common to all three.

The estimate under the first head should show, the quantity and cost of rock in line cuttings; and such clay or sand as is contained in the same, together with sand and clay which can be easily obtained by borrowing, and the quantity and cost of the trestle-work required to fill up the ungraded portion remaining after this is done; the line, as regards grading, being considered completed under the present contract, when this is done.

The estimate under the second head will show the cost, with the trestlework done away, and earth or sand substituted. It being distinctly understood that if this plan is adopted, the contractor will make no charge for extra haul, no matter what distance he may have to carry the material to make up his banks, nor for cutting in a narrow rock on each side of the sand fillings across water-stretches. If trestle-work must be retained at some points, you will bear in mind that it will prove most economic in high banks at points other than water-stretches.

The estimate under the third head explains itself. I have not yet the necessary data, in the shape of longitudinal section, cross-sections, &c., furnished me, by you, to enable me to have the estimates made here. You will therefore have to prepare and forward them to me, as it is very important that I should have this information at the earliest practicable date. Mr. Ruttan, who takes this out, has kindly, at Mr. Smith's suggestion, undertaken to render you all the assistance in his power to make them up; and you can keep Mr. Rodger, who accompanies him, to assist you, and after that he will rejoin Mr. McNab.

Mr. Smith has authorized me to permit the contractors to put in the double rock sides across water-stretches to be filled in between with sand-top to grade with sand, when such a course is practicable and desirable. Where there is enough rock at hand for a full rock bank over water-stretches, this course can be followed.

Mr. Smith has consented to the grade being lowered somewhat between Stations 1230 and 1330, say something like three feet, or thereabout, at the summit at Station 1280, if you think the same can be done with advantage.

Mr. Ruttan reports that there will only be rock enough in the cuts at the west end of the Contract to make one of the rock sides to the embankment across "Cross Lake." Mr. Smith has authorized the lowering of the grade through them and over Cross Lake, to such an extent as will permit sufficient rock from the cuts to make up the rock bank on the other side.

There must be a clear understanding with the contractors as to the fact that if consent is given as to earth filling in lieu of trestle-work, all the banks must be so made up, or at least those that the Engineer may order to be done, and not those that he, the contractor, may select.

Truly yours,

JAMES H. ROWAN.

H. CARRE, Esq.,
Division Engineer, Contract 14.

Having written that letter, 18th September to Mr. Smith in Winnipeg which I have just read, I received this in reply from him, dated September 26th, 1878:—

CANADIAN PACIFIC RAILWAY,
MANITOBA DISTRICT, ENGINEER'S OFFICE,
September 26th, 1878.

MY DEAR SIR,—I have recently made a close inspection of the line comprised in Contract No. 15, and herewith enclose a list of works to be executed in accordance with the recommendation of the Engineer-in-Chief, dated May 22nd, 1878. As reporting on the offer of Mr. Whitehead, dated November 6th, 1877, I have received no instructions from the Department that this recommendation of the Engineer-in-Chief has been approved, but I am of opinion that it would be expedient to carry it out as far as the above-mentioned list of works extends, and shall again call the attention of the Department to the subject. Meanwhile you can proceed with the works in accordance with this list. The mode of crossing the following places is reserved for further consideration:—

Cross Lake,
Lake Deception,
War Eagle Lake.

The designs for which I shall endeavor to decide on at an early date.

Yours most truly,
(Signed) MARCUS SMITH.

JAMES H. ROWAN, Esq.,
District Engineer.

List of works to be done on Contract 15, as communicated to Mr. Carre, which Mr. Marcus Smith directed me to make a copy of and consider as those referred to, in his letter of 26th September, 1878.

- 24.—To be settled in Ottawa.
- 39-69.—Put in crib-work where there is earth embankment in water.
- 82.—Put in crib-wharfing at \$2.75 on south side.
- 106.—Estimate masonry in mortar at 11:00 Estimate cost of box 2½ by 2½, and cost of trestle-work if excess of masonry is very great put in trestle.
- 153-40.—Put in sills on rock for double track.
- 138 to 160.—Make soundings and surveys for wharfage; grade 0-50.
- 168-70 to 171.—Make rip rap in water first and then embankment.
- 179 to 183.—Borrow from cutting on west side for protection slopes.
- 187.—Make 8 feet tunnel.
- 219.—Put in small beam Culvert No. 1.
- 224 to 229.—Borrow rock from cutting.
- 243-80.—Put in rap rap.
- 315.—Howe truss wooden bridge, 40 feet span, with trestle approaches and 5 by 3 culvert, \$5,300, or 8 foot culvert, \$6,300. Making embankment at 315 and 8 feet, tunnel at 290 and diversion 315 to 290, \$10,800.

According to Fleming's instructions the last is the best plan, but wait further instructions. Revise estimate.

- 380 to 390.—In case of shallow rock cutting, carry rising grades further on.
- 405.—Three spans of 100 feet, with masonry piers, or earth embankment, with six-foot tunnel; get more information with boring tools.
- 467.—No structure required.
- 515.—Swing line in to avoid heavy embankments without materially increasing rock excavation.
- 550.—Station ground to remain as located; house and bridge being built.

- 573.—Let trestle remain and renew with iron pipes.
 645.—Take out rock and make south ditch continuous.
 670.—Make channel through stones, and if water overflows bank put in small culvert.
 720.—Put in 4 by 2½ box culvert.
 Note.—If there is no probability of getting stone anywhere near, put in 3½ by 3½ wooden box culvert, to take 3ft. iron pipe; try to get stone.
 Lake Deception.—Calculations of cost of structure made by Kuttan, \$69,141.
 Bridging and earth-filling about the same.
 810.—Go on making bank at 810, to show material in Borrow Pit; if clay is found make slopes 2 to 1; probable amount of sand in Borrow Pit, 1,000,000 yards.
 849.—Bents of culverts up.
 980.—Swing line to keep out of water; 2° curve through cutting.
 1040.—Box culvert 4 by 2½; masonry against tunnel; make tunnel.
 1067.—Trestle culvert begun; complete it.
 Red Pine Lake.—Locate line on south side of lake; cross-section and calculate cost of each; adopt cheapest and best line.
 Fellowes Lake.—Off-take ditch depends, on which line is adopted at Red Pine.
 Summit Lake.—Try location, north side, with grades to suit.
 1397.—Put in 6" flatted timber; box culvert with hand-laid stone, if rock; if earth embankment, put in trestle; if rock, put in wooden box or logs.
 1407.—Same as last case.
 1410.—Revise location and put in cast-iron pipe three feet diameter; rock embankment may carry water.
 1445.—Put in tunnel.
 1449.—Put in tunnel 6 feet.
 1706.—Put in tunnel 6 feet.
 1743.—Put in tunnel 6 feet.
 1792.—Put in tunnel 6 feet.
 1804.—Three-foot iron pipe or trestle culvert.
 1831-40.—Let trestle be put in if contractor wishes.
 1860.—Off-take to south and small culvert under cutting.
 1912.—Cross Lake.—Put in twelve-foot tunnel.

By Mr. Haggart :—

1379. In this letter of 18th September you state: "I, therefore, when you were here last October, submitted a plan to you whereby the work could be expedited, the cost of these banks reduced, and the rock taken from the cuttings used to a greater advantage." Did you submit that in writing to Mr. Smith?—No; it was a verbal conversation we had in the office.

By Mr. Mackenzie :—

1380. That letter was nine days after the date of the last letter?—Yes; I have another letter from Mr. Smith. Mr. Fleming was asked; I think this morning, about some banks which had been made up with earth instead of trestle-work, to which he replied that he could not be expected to be fully conversant with the manner in which all the different works were executed. That bank is the one referred to in the instructions given by Mr. Smith in this last letter.

By Mr. Haggart :—

1381. Are those ordinary changes made in the course of construction?—Some are very material and some are not. There is one very serious change—175 feet more tunnelling is added on the line than was originally intended. That is one of the large changes, but the changes Mr. Smith recommended, although large changes from the original contract, are improvements to the line. That I wish to be distinctly understood. What I wish to convey is this: there was some talk about a bank being made in contravention of the contract; that is the bank which Mr. Smith ordered to be done, and the instructions are in this letter. This is a letter from Mr. Smith to myself, dated Winnipeg, September 20th, 1878:—

WINNIPEG, Sept. 20th, 1878.

SIR,—In order to prevent any misunderstanding respecting the measurement of loose rock found in cuttings, I put in writing the explanations which I made yesterday to the Division Engineer of Contract 15, in your presence.

Loose rock may be defined to consist of such boulders, or detached pieces of rock of any size or form, that can be moved with facility by hand, pick and bar, without the necessity of blasting. When such boulders or pieces of rock are found in a cutting lying so closely together that they are mostly in contact with each other, though the interstices may be filled up with sand, clay or other material, the quantity of loose rock shall be estimated at the full dimensions of the cutting, without making any deductions for the interstices.

In other words, a cubic yard of loose rock is what would fill a cubic yard of space in making a rock embankment. But it is very seldom that loose rock lying so closely together is met with in cuttings; generally detached pieces of rock or boulders are found, singly or in groups or pockets, embedded in masses of sand or clay, and only form a percentage, large or small, of the whole space. It is very difficult to estimate the quantity in such cases, but can be guessed at by simple inspection very closely by those experienced in railway construction; but this should be done by the Engineer-in-Charge and the contractors' agent together, and a percentage agreed on it, or by watching the working for an hour or so, and having the stones put into separate waggons, the number of stone-filled waggons to earth-filled would show very nearly the true proportions of stone to earth. It is the practice of some engineers of high standing to overcome this difficulty by estimating the whole quantity in a cutting as loose rock, when the actual quantity appears to the eye obviously over 60 per cent. of the whole. On the other hand, when the quantity is under 20 per cent., it is disregarded, and the whole returned as earth excavation. This is done on the same principle as clearing; no difference is made between a dense forest and one in which the trees are very thinly scattered. But, on the other hand, if a few thinly scattered trees are met with, as in parks, no notice is taken of them, as the great mass is essentially prairie or pasture. If the difference in the estimates of the Engineer-in-Charge is so great that it cannot be adjusted satisfactorily, then the only course is to separate the stones from the earth, leaving the former in the cuttings piled, so as to be measured at convenient intervals of time.

Yours truly,
(Signed),

MARCUS SMITH.

JAMES H. ROWAN, Esq.,
District Engineer.

This is the last instruction I received. I understood the Committee to tell me that Mr. Smith had stated he had approved of a certain place on the work where rock banks were to be put in. In my letter of 20th September I called attention to what the Chief's instructions, Mr. Fleming's instructions, were with respect to the matter, and I understand that Mr. Smith said I wanted to convey the idea that Mr. Fleming had given no instructions other than those contained in the specifications.

1382. Had you any instructions from Mr. Fleming?—No; but from Mr. Smith I had.

1383. I understood you to say he pointed out the place where he authorised a change?—I have a telegram from him, dated Ottawa, 20th December, 1878. It reads as follows:—

(Copy).

Telegram to JAS. H. ROWAN,
Winnipeg.

OTTAWA, 20th December, 1878.

War Eagle, Rock Lake. Make solid rock embankment to 3 feet above water; 42 feet wide at top, trestle superstructure; outside post raking 3 inches per foot. Lake Deception; earth embankment, with rock protection in water in the approved form.

MARCUS SMITH.

1384. What difference is that from the original contract?—That is one of the numerous places where Mr. Smith approved of the substitution of rock sides for solid rock.

Mr. MARCUS SMITH recalled:—

By Mr. Haggart:—

1385. Please explain where you directed a change in the line?—It extends over about one and a quarter miles. Mr. Rowan suggested a change in the mode of distributing the stone taken from the cuttings, by making narrow stone embankments on each side of what would be a solid embankment when filled in. I saw it would be a more economical distribution of the rock, and approved of it on that portion of the line; at the same time I warned him not to make any material alterations without submitting plans and profiles to me to be submitted to the Department, because I had no power to make such alterations, especially if they involved additional expense. You will find that the telegram Mr. Rowan has just read shows I did not give a general approval, because I said where the rock was to be used and where it was not to be used; I said that in one place, War Eagle Lake, there was to be the old style of low embankment surmounted with trestle-work; but in the other place, where suitable, the plan suggested would be adopted.

J. H. ROWAN recalled:—

By the Chairman:—

1386. In regard to the surveys for Section 14, Mr. Carre said yesterday that before he had completed the survey, in fact when he was about 14 miles upon Section 14, coming eastward, you telegraphed him to come immediately to Winnipeg to make up the plans in order to prepare for tenders. That was the case I suppose?—He did not.

1387. Where were they prepared?—I could not say. I furnished simply plans and profiles.

1388. Were they finished so that the quantities could be got out readily?—Certainly; the quantities such as the plans and profiles would show.

1389. Did you consider they were sufficiently accurate to take out quantities upon; to make an approximate estimate?—Yes; I mean such an estimate as that if a number of men tendered for the work, we would know whose was the lowest and highest tender. It did not at all profess to be what would be the actual quantities when the work was done.

1390. Mr. Carre said he had not finished surveying the section, but had only gone over 14 miles of No. 14, going westward from Cross Lake; how did you propose to get the quantities on that line when he had not been over it?—Mr. Carre—I only sent in plans for 15. I had finished 15 at the time; I sent in plans for 15, not for 14.

By Mr. Bergin:—

1391. What did you go to Winnipeg for, Mr. Carre?—Just to make up plans for 15.

By the Chairman:—

1392. Then 14 was let without any survey, Mr. Carre?—There was a preliminary survey made.

Examination of Mr. ROWAN continued:—

By the Chairman:—

1393. Was there a survey?—As I have stated, there had been a preliminary line run through the country, but there was no location survey.

1394. Do you consider that the system of taking out the quantities you suggest, which was followed on this line, is one that furnished a basis by which tenders that are inconsistent, or when there are high prices for one kind of work and low for another, can be judged; is there any certainty that what appears to be the lowest tender will turn out to be the lowest tender?—I was not aware that I had proposed any system of taking out the quantities.

1395. You stated just now that the profiles were made in order that the quantities might be taken out?—I said that was why they were made; but I did not propose that system.

1396. I don't say that you had proposed the system in the sense that you had recommended it to the Government; I merely ask you if the quantities taken out in that way furnish a safe basis for judging of the tenders?—They furnish the safest basis under the circumstances.

1397. That is what I want to know; I am asking you your opinion; do you consider that that is a safe way of making contracts?—Another plan might be adopted if we had more time, but under the circumstances that is the only way the contracts could be let.

By Mr. Mackenzie:—

1398. But the question is whether you think that a good plan or not?—I think it is a very fair plan of arriving at an approximation of the quantities on which tenders can be based, and the work let; by it you will ascertain which is the lowest tender on the work let, because subsequently the work has to be paid for on the actual quantities executed, as stated in the specification.

By the Chairman:—

1399. Suppose a man tenders for small quantities of work at high prices, and large quantities at low prices; and in the progress of the work you find it necessary to change its character so that the high-priced quantities increase and the low-priced quantities diminish, might it not turn out that the tender which appears to be the lowest would be the highest?—It might.

By Mr. Mackenzie:—

1400. And if the conditions were reversed it would be very much the lowest?—Yes; it might be very much the lowest.

By the Chairman:—

1401. As a rule are the quantities reversed in such case?—They are in the present case; on Section 15, for example, they are reversed. The items in the contracts on which I hear people express the opinion that the prices are supposed to be very low, are very considerably increased in the work as it is proposed to be done, as compared with the original estimate.

1402. There are about \$300,000 worth of timber provided for in the original estimate?—Yes.

1403. That's done away with?—Yes.

By Mr. Mackenzie:—

1404. Is it done away with yet?—No.

By the Chairman:—

1405. If your recommendation had been accepted it would have been done away?—Yes.

1406. What part of the work on Contract 15, for which low prices were placed in Mr. Whitehead's tender, is increased under the proposed change?—The line tunnels are increased.

1407. How much?—I could not state from memory. I know there are certain items, the line tunnels, the stream tunnels (which are at the worst prices of all the work, in my opinion) are increased.

1408. I would like to know the amounts that increase would involve?—You have a statement, Sir, before you of the work to be done under the contract; line tunnels, as per schedule, \$12,750, was the price of the original quantities; \$15,450 is the price now.

1409. How much is that increased?—\$2,700 for that item. I might state before I go any further, that at the examination that was made before the Committee of the Senate, I submitted a statement showing what was increased and what was decreased; I can submit a copy of it to this Committee.

1410. Then the twelve feet tunnels?—There were 320 lineal feet of twelve feet tunnels in the original; there are now 400 lineal feet.

1411. How much is the increase there?—About \$1,400 or \$1,500; then there are eight-foot tunnels; 450 feet in the original estimate and 800 under the new estimate.

1412. How much of an increase will that make?—That will be about \$1,600.

By Mr. Bergin:—

1413. How much of this tunnelling has been done?—I am not in a position to state; but the tunnelling has to be done whether trestle-work is used or not.

By the Chairman:—

1414. How much is the increase in the earth-work; and is the price high or low?—The increase in the earth-work is the difference between 80,000 and 224,000 yards.

1415. I mean the amount required under the contract to finish the work?—This is the estimate to complete the work if trestle-work is done away with, and not if the work is completed under the contract.

Mr. SANDFORD FLEMING, re-called:—

By Mr. Bergin:—

1416. How long have you been Chief Engineer of the Pacific Railway?—From the beginning of April, 1871

1417. How long have you been absent from the country since that time?—I have been absent a portion of the last three years.

1418. What salary do you receive?—I have received no salary.

1419. No salary has been fixed?—No salary has been fixed; no salary has been offered me.

1420. You do not expect to serve the country for nothing?—Certainly not.

Mr. J. H. ROWAN, re-called:—

By Mr. Haggart:—

1421. Have you prepared a statement of the cost of completing this work?—I have.

1422. Have you made a return of the estimated cost?—Yes.

1423. I would like to see that estimate?—I have not got it here.

By the Chairman:—

1424. Mr. Carre stated that the estimate in the further column of the table of the estimated cost of Contract 15, was the estimate before the Department of the cost of completing the work under the proposed change?—I never saw this paper before; but on looking at it now, and my attention being called to the last column, I see the sum total at the bottom. Speaking from memory, I should say it represents the total cost to complete the work, if trestle-work is done away with.

By Mr. Haggart:—

1425. You received letters from Mr. Smith time and again calling upon you to provide an estimate of the cost of finishing the work?—I could not say "time and again." I had two or three letters on the subject.

1426. And telegrams from Mr. Fleming on the subject?—No; I have never received any.

1427. Have you never received a telegram from Mr. Fleming asking for an estimate of the cost to finish the work?—I cannot call to mind that I ever received such telegram.

1428. Did you ever make up an estimate of the cost to complete the work?—I have.

1429. I understand you to say that you have not got that with you?—I have not it with me.

By the Chairman :—

1430. Mr. Smith says: "I regret to say, notwithstanding urgent letters and telegrams from Mr. Fleming and myself, I have not to this day received one report or the estimate asked for." He says: "Before leaving Winnipeg I gave Mr. Rowan instructions to have all the surveys made I suggested, and obtain all necessary information respecting other matters, to send monthly reports of all that was done on the work, and have as close an estimate as possible made of the probable cost of completing the work. This estimate to be in Ottawa at the end of January." Is that so?—That is so. He has not received an estimate for the simple reason that I could not give it; I had not the means to furnish the estimate asked for. I have not prepared such an estimate as he asked for, because I have not data. I was to be furnished with instructions what to do, and what not to do, by Mr. Smith. There were certain matters reserved, and until I had information as to what was to be done in those cases, I could not make the estimate asked for. I could make an estimate of the work done in the way I supposed it would be done.

1431. What is the cost supposing the work to be done in the way you supposed it would be done?—I estimated it at \$2,525,000.

By the Chairman :—

1432. Then the increased quantity of earth which you thought to be the difference between 80,000 and 224,000 yards is really the quantity in that further column, if the proposed change is carried out?—If the proposed change from trestle-work to solid earth-banks is carried out, that is the estimate.

1433. How much of an increase will it be over the amount tendered for?—80,000 yards was the original tender for earth excavation; the amount carried out is 1,657,420 yards; but that difference is not all due to the substitution of earth for trestle-work; the 80,000 yards is not based on the same data as the 1,657,000.

By Mr. Bergin :—

1434. When did you prepare that estimate?—I think these figures were prepared a year ago.

Mr. CARRE, re-called :—

By the Chairman :—

1435. Do you know when the estimates were prepared?—I made two estimates, one in January, 1879, and one in February, 1878, and I think this is the one of February, 1878.

By Mr. Haggart :—

1436. What is the difference between that and the 1879 one?—The 1879 estimate has 516,226 yards of rock and 1,720,714 yards of earth.

By the Chairman :—

1437. That is an increase?—It is an increase because there is more borrowing (Estimate of 1879 filed). That does not include track-laying and ballasting on to Section 14.

Mr. ROWAN, re-called :—

By Mr. Oliver :—

1438. Were the relations between yourself and Mr. Smith of a pleasant character; did you agree or disagree?—On this subject?

1439. On any subject in connection with the works?—Well, we had some differences; Mr. Smith spoke to me in a way in which I had never been spoken to before by a gentleman, on several occasions; but that is not a very pleasant matter to bring up and I don't want to say much about it.

Mr. MARCUS SMITH put in the following:—

(Memorandum.)

6th May, 1879.

Since my examination before the Committee, I have read the letter of the Engineer-in-Chief, Mr. Fleming, to the Honorable the Minister of Public Works, dated 29th April, 1870, and some part of Mr. Fleming's evidence before the Committee.

In reference to the monthly certificates, I have to state that I signed those at the request of Mr. Fleming, and was no further responsible for them than that they were made out in accordance with the detailed estimates sent to this office by the District Engineer, who is responsible for the quantities, and I had no reason to doubt that he was executing the works by order of the Department of Public Works, under the instructions of the Engineer-in-Chief, as stated on the certificate.

Mr. Fleming's statement that I have had full charge of the works, and he has looked to me that everything was properly done, and that nothing was done without authority, is wanting in accuracy. It appears in the evidence that occasionally both himself and subordinates have had consultations with and made reports to the Minister of Public Works on most important matters, without my knowledge, or without any previous consultation with me.

As regards any changes in the works on Contract No. 15, by substituting solid embankments for trestle-work, Mr. Fleming seems to have been so well assured that his recommendation of the 22nd May, 1878, to the Department of Public Works would be approved, that he gave verbal instructions to Mr. Rowan to proceed in accordance therewith; this is what Mr. Rowan distinctly stated to me.

I had so little doubt of this on receiving a copy of that letter, which I did, at Winnipeg on the 19th September, that I did not think it necessary to communicate immediately with the Department of Public Works, and an answer to the question respecting these changes would not have assisted me; for, on going over the section, I had found that the plans for the construction of many of the works would have to be remodelled and a new proposition submitted to the Department, which I shall now endeavor to explain briefly.

I went over the whole of the section, in company with Mr. Carre (the Resident Engineer) and Mr. Ruttan (the Contractor's Engineer); and took notes of every work of importance. The information obtained respecting the depth of soft mud, and the dip of the rocky bottoms of the numerous small lakes that had to be crossed, as well as on other matters, was most meagre, but it appeared to me extremely probable that in some of these neither trestle-work or solid embankment would be suitable and bridging might have to be adopted. In other places trestle-work might be suitable in some cases and impracticable in others, and the cost of solid embankment might be enormously heavy. In fact, each of these difficult portions of the work requires a special study, and proper works on any general theoretical system could not be designed on the insufficient data in possession of the engineers.

Therefore, after arriving in Winnipeg, I telegraphed to Ottawa for a set of boring tools, and gave instructions to the Engineer in charge to get all the information possible.

At several points on the line it appeared to me that a deviation would greatly reduce the quantity of excavation, and I gave instructions for surveys to be made to test this.

I then worked a fortnight in the office at Winnipeg endeavoring to solve some of the difficulties of the work, and I found that generally where earth embankments had to be made, either at present or in the future, after the decay of trestle-work, the disposal of the rock taken from the cuttings in two narrow embankments where the foot of the slope would meet the water, would in most cases be the most economical. This is the way Mr. Rowan was having the work done without any authority from me, evidently with the object of making earth embankments; but as it did not neces-

sarily prevent trestle-work being used in the first instance, subsequently to be replaced by embankment, I did not see any serious objection to its being done where found suitable, reserving, however, certain cases for further consideration.

In some cases in deep water and soft mud, with a shelving rock bottom, I found trestle-work would be scarcely practicable and not economical, as a large quantity of rock would be required for the base; or, if piling were used, the piles would have to be braced under water.

At the time of my visit a considerable quantity of rock from the cuttings had been disposed of in the manner above stated; and at several points in dry ravines, embankments had been made instead of trestle-work—some of this had been done in 1877 before I had anything to do with the works. The contractor was getting forward steam-shovels and other plant for constructing earth embankments, and no provision was being made for trestle-work.

Before leaving Winnipeg I gave Mr. Rowan instructions to have all the surveys made which I had suggested, and to obtain all necessary information respecting other matters; to send me monthly reports of all that was being done on the works; also to have as close an estimate as possible made of the cost of completing the works, this estimate to be in Ottawa not later than the end of January.

I regret to say that, notwithstanding urgent letters and telegrams from Mr. Fleming and myself, I have not to this day received one report or the estimate asked for.

This caused me so much embarrassment that on the 17th of February last I wrote to Mr. Fleming asking him to relieve me from further responsibility in regard to this section, and to take the matter into his own hands. He has since informed me that he intends to send an engineer specially to investigate and report on the works of this section.

The necessity of the monthly reports asked for will be seen when I inform the Committee that on the 6th February I telegraphed Mr. Rowan to have borings made in Cross Lake in order to determine what kind of structure would be required. I have no information that these borings are carried out as directed, but I have learned lately that the contractor has put up temporary trestle-work for the purpose of making an earth embankment there. I have given no authority for such work.

I had, however, a letter from Mr. Carre, the resident Engineer, dated 30th November, 1878, in which he states that the deviations of the line which I had suggested had proved very satisfactory; and within these last few days he has shewn me plans, profiles and quantities from which it is estimated that a saving of not less than \$130,000 has been effected by these deviations, if solid embankments are made. If trestle-work were adopted there would not be so much difference, but that is almost impracticable in some places.

On the 20th December I telegraphed Mr. Rowan that for the crossing on War Eagle Lake a rock embankment to a little above water level, with trestle superstructure, had been decided on, for I found it would be the most economical under all circumstances.

At Lake Deception I saw no reason to make any change, as earth embankment had been ordered before I had anything to do with the works, and it is certainly the most suitable for that place.

MARCUS SMITH.

The Sub-Committee then adjourned.

THURSDAY, May 8th.

Sub-Committee met—Mr. PLUMB in the Chair.

Mr. ROWAN submitted the following statement:—

OTTAWA, 7th May, 1879.

SIR,—Having, in obedience to a summons to that effect, given evidence as to the present condition of the work on Contract 15, and stated the instructions which I had

received in reference to the method of completing that contract, I was much surprised when, just as the Committee had concluded taking evidence and were about to adjourn, a long list of charges against me were handed to you by Mr. Marcus Smith. Had the Committee closed the taking of evidence after this document was read a great injustice would have been done to me, as the charges would have gone to the public without my being afforded any opportunity of refuting the statements made.

I was not aware, until I had heard them read, that such charges were to be laid before the Committee, and the time allowed me to answer them being so very short, I cannot, in the first place, produce evidence in support of some of the statements I now feel called upon to make; and, in the second place, my replies cannot be so full as I would desire to make them.

It is said that things have been done upon Contract 15 which should not have been done. I think my evidence proves conclusively that the work has been carried out by me in accordance with the contract and orders received from the acting Engineer-in-Chief; and if anything has been done which should not, Mr. Smith is responsible.

It must strike any dispassionate person as remarkable that it is only when my evidence to the above effect is given before the Committee these charges are brought before it, as if for the purpose of breaking the force of my evidence or shifting the responsibility on to my shoulders.

Mr. Smith states: "that both Mr. Fleming himself and subordinates have made reports to the Minister of Public Works, on most important works, without my knowledge or without any previous consultations with me."

If by the term "subordinate" I am meant, I have only to say that any consultations I have had with the Minister of Public Works have been at his direct request. And I have not made any report to him on matters in which he (Mr. Smith) should be consulted.

The only report I have made to the Minister in which Mr. Smith was interested (and even in this case I notified Mr. Smith that I was making it) was when I was obliged to detail his most ungentlemanly conduct and language to me—which letter must be still on file in the Department; and he has acted in this manner towards me not once, but on several occasions. Other members of the staff have also been treated by him in the same brutal manner in my presence.

I most distinctly and positively state, I never told Mr. Smith "Mr. Fleming gave me verbal instructions to proceed with the work, as it is now being done," under Mr. Smith's orders. What I said was, "Mr. Fleming told me the Minister approved generally of the proposed change, but there was no order given to carry it out." All my letters to Mr. Smith go to prove this.

He also states: "After arriving in Winnipeg I telegraphed to Ottawa for a set of boring tools, and gave instructions, &c., &c.," thereby leading the Committee to believe that I was to blame for not having carried out these instructions, when the facts are: the tools did not leave Ottawa until the end of January last, and only reached me a short time before I started to come down here (as I had reported to the Department) to attend this investigation.

The changes he made in the location of the line were for the most part suggested and pointed out to him by the Division Engineer (who, with myself, knew that they ought to be made long before Mr. Smith came over the work), and should, and would, with others, have been made long before, had Mr. Smith gone over the work, as I begged him to do in the previous year, when he turned back, although within four hours' run of the work. On this and other occasions when he visited my district I earnestly desired him to come over the work with me, but instead of attending to this very necessary duty, he persisted in continuing his journey to British Columbia.

As regards the changes in the work, the facts are before your Committee; I shall therefore say nothing further upon this subject.

With reference to reports, the evidence before you shows that I have made several reports in relation to this work, which do not appear to have been read, much less acknowledged.

If my memory serves me right (I have nothing here to speak accurately on the point) the letter in which Mr. Smith asked for an estimate did not reach me until a date when it was physically impossible that the directions it contained could be complied with; and Mr. Smith has not told the Committee what was in reality the fact, that when he left Winnipeg he reserved certain work for further consideration, and was to inform me as to what was to be done in those cases, at an early date. It is only quite recently that I received instructions in reference to some of these, and yet without this information and instructions as to the manner in which the work was to be completed, it was impossible for me to comply with the directions contained in his letter.

Not having received any acknowledgment of my reports to him, or had any instructions in reference to them, I have made my more recent reports to the Engineer-in-Chief.

I acknowledge that I have not sent in the weekly reports as directed in the instructions of the Engineer-in-Chief, and that I have received a reprimand from him in connection with this subject; but the reason why this has not been done is that, before I receive these reports, they are from two to three weeks old (owing to the difficulty of communication, and before they would reach the head office a week or ten days more would elapse. I, therefore, thought they would be more calculated to mislead, than inform, as to the actual state of the works.

As to the borings which are here again referred to, I have already explained the facts in relation thereto. The borings have only been under way for a short time, and sufficient data has not yet been obtained to enable me to make a satisfactory report.

As regards the trestles, I reported to the Engineer-in-Chief that this work had been done; but as it is a work which the contractor does at his own expense, and for which he neither expects or intends to ask pay, it is not a matter in which the Government are concerned at all, being a portion of the contractors' plant, which may be used for transporting material and supplies on to Contract 15, or for making up the bank in the manner approved by the Acting Engineer-in-Chief.

In another part of this letter I have referred to Mr. Smith's turning back when within a short distance of the work. If I had the time at my disposal, I could say a good deal more on this and other subjects, which I could prove by witnesses.

That Mr. Smith had, or fancied he had, "a grievance" against the Minister of Public Works, and also against the Engineer-in-Chief, I gathered from remarks he made soon after arriving in Winnipeg; and it was quite evident to me that he was more intent in collecting data to be used against them, than in assisting to solve the many difficult questions connected with this work.

I regret extremely being forced, by the course of misrepresentation which he has followed during this investigation, to make these statements; but, since my arrival in town, I have been credibly informed Mr. Smith has publicly stated his belief "that the Engineers are in collusion with the Contractors." For the sake of the profession, in justice to the honorable character of the members of the staff employed under me, and my own, I demand that he be called upon to substantiate this charge, if he can, or take the consequences.

I have the honor to be, Sir,

Your obedient servant,

JAMES H. ROWAN.

J. B. PLUMB, Esq., M.P.,

Chairman Sub-Committee,
Public Accounts.

Mr. FLEMING also submitted the following memorandum :—

(Memorandum.)

CANADIAN PACIFIC RAILWAY,
OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 8th May, 1879.

I have just seen a copy of a memorandum, dated 6th May, submitted in evidence by Mr. Marcus Smith before the Sub-Committee of Public Accounts, in re-Section 15, Canadian Pacific Railway.

The only two paragraphs which require notice from me are the following :—

"In reference to the Monthly Certificates, I have to state that I signed these at the request of Mr. Fleming, and was no further responsible for them than that they were made out in accordance with the detailed estimates, etc."

"Mr. Fleming's statement that I have had full charge of the works, and he has looked to me that everything was properly done, and that nothing was done without authority, is wanting in accuracy."

There is not the slightest want of accuracy in the statement which I made that I am aware of; if I felt there was, I would promptly correct it.

Mr. Smith had full charge of the works during my absence in England, and I certainly looked to him and the Government looked to him to have everything properly done under authority. On my return to Ottawa at the end of October I had other duties to attend to, and as far as Section 15 is concerned, I allowed him to attend to that section precisely as during my absence; in proof of which I may take the liberty of quoting the last paragraph of a non-official letter which I sent Mr. Smith on the 14th November last.

"I am waiting for an opportunity to see the Minister, in order to discuss various matters. I have every reason to hope that he will be disposed to concur in some arrangement, with regard to our respective positions, which will be agreeable to you and to me, as well as advantageous generally. Until then I thought it best to send everything requiring action to you, as if I was not here."

Mr. Smith has continued to attend to this section, and has signed five certificates in favor of the contractor, the last being 11th March, \$1,279,972.

If further proof is required as to the accuracy of my statement, I would refer the Committee to Mr. Smellie, the Engineer in charge of the office here, who will attest that I did not ask Mr. Smith to sign the certificates without satisfying himself as to their accuracy; that I actually did not see the certificates until a few days ago, when I asked for them to learn how many there were and what they meant. As a matter of course, certificates signify exactly what is expressed on the face of them, and the party signing them is responsible for their contents.

SANDFORD FLEMING.

[The following letter and statements were before the Committee.]

CANADIAN PACIFIC RAILWAY,
OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 23rd December, 1878.

MY DEAR SIR,—On the 12th inst., Messrs. Purcell & Ryan, the contractors for Section 25, made application for the percentage retained by the Government on their contract.

I looked into the matter and found that while the original total estimated amount of work was \$1,037,061, already \$1,312,015 had been certified as the value of the work executed, showing a serious discrepancy between the original estimate and

returns of work done—too serious, indeed, to pass unnoticed. I, at once, telegraphed Mr. McLennan, the Engineer in charge of the Section, to furnish, without delay, a return accounting for the excess referred to.

I had, some days previously, heard that there was a material difference in the quantities, but this is the first occasion on which the matter has regularly come before me. I deem it proper, therefore, to lose no time in enquiring into the matter. I have as yet had no reply from Mr. McLennan, but possibly some explanation will come from him before long. In the meantime it is advisable to issue no further certificates on this contract.

I think this is the proper course to take in the matter, and if the information required cannot be had in any other way, it may become necessary to have a re-measurement of the entire work.

Yours very truly,

SANDFORD FLEMING.

Engineer-in-Chief.

MARCUS SMITH, Esq.,

Ottawa.

MEMORANDUM.—Canadian Pacific Railway—Fort
(Quantities per Schedule taken out for 45 miles

Description of Work.	As per Schedule on which Contract was based.			As executed by Sifton & Ward.			Quantities.
	Quantities.	Rate.	Amount.	Quantities	Rate.	Amount.	
		\$ cts.	\$ cts.		\$ cts.	\$ cts.	
Clearing..... Acres	700	20 00	14,000 00	56 03	20 00	1,120 60	.....
Close cutting..... "	22	40 00	880 00	58 79	40 00	2,351 60	.....
Grubbing, including side ditches..... "	114	60 00	6,840 00	87 95	60 00	5,277 00	.....
Fencing..... per 100 L. feet	20,000	5 62	1,124 00	876 74	5 62	4,927 28	1,700
Solid rock excavation..... C. yds	30,000	1 25	37,500 00	24,294	1 25	30,367 50	.....
Loose do..... "	8,000	0 50	4,000 00	40,141	0 50	20,070 50	1,439
Earth excavation, includ- ing borrowing..... "	944,000	0 23	217,120 00	585,231	0 23	134,603 13	13,962
Earth excavation, addi- tional, between stations 235 and 260..... "				103,740	0 05	5,187 00	.....
Under drains..... per 100 L. feet	74,000	50 00	37,000 00	14,769	50 00	7,384 50	131 48
Bridges, Howe Truss, 100 ft. clear..... Span.	2	3,000 00	6,000 00	3	3,000 00	9,000 00	.....
do 80 ft. clear..... "	6	2,400 00	14,400 00	2	2,400 00	4,800 00	.....
do 60 ft. do..... "	1	1,800 00	1,800 00	1	1,800 00	1,800 00	.....
do 40 ft. do..... "	4	1,000 00	4,000 00				.....
Cribwork in abutments and piers, with timber and stone-filling..... C. yds	6,800	2 25	15,300 00	3,677	2 25	8,273 25	.....
Rip-rap..... "	1,200	4 00	4,800 00	5,476	4 00	21,904 00	996
Piles driven..... L. feet	1,300	0 40	520 00	22,081	0 40	8,832 40	172
Timber 16 x 12..... "	10,000	0 35	3,500 00	7,614	0 35	2,664 90	.....
do 12 x 12..... "	100,000	0 30	30,000 00	57,011	0 30	17,103 30	429
do 12 x 6..... "				1,346	0 15	201 90	.....
do 9 x 9..... "				41,648	0 15	6,247 20	.....
do 9 x 8..... "				8,700	0 15	1,305 00	816
do 9 x 6..... "							687
Flatted timber 8 inches..... "	30,000	0 15	4,500 00	7,015	0 15	1,052 25	.....
Hemlock or spruce planks per 1,000..... B.M.	20,000	20 00	400 00				.....
Pine planks per 1,000..... "	10,000	20 00	200 00	37,502	20 00	750 04	315
Hardwood planks per 1,000..... "	5,000	20 00	100 00				.....
Sheet piling..... L. feet				49,014	30 00	1,470 42	.....
Wrought iron..... Lbs.	20,000	0 10	2,000 00	54,462	0 10	5,446 20	672
Cast iron..... "	3,000	0 07	210 00	21,896	0 07	1,532 72	.....
Building, supply road.....						358 00	.....
Additional cartage on supplies.....						2,258 00	.....
Expenditure caused by change of line, Fort William westward.....						3,142 00	.....
Extra haul..... C. yds						601 31	.....
Powder..... Kegs				50	4 00	200 00	.....
Timber at Town plot, 16 x 12 L. feet				26	0 28	7 28	.....
do do 12 x 12..... "				1,775	0 21	372 75	.....
Pine plank..... B. M.				29,936	14 00	419 10	.....
Timber and wages in erecting gallows frames, Howe Truss bridges.....						983 10	.....
Altering and finishing other bridges and culverts.....						1,186 64	.....
Days' work, as per bill No. 1, to October, 1877.....							.....
do No. 2, to Nov., 1877.....							.....
do No. 3, to May, 1878.....							.....
do No. 4, to July, 1878.....							.....
Totals.....			406,194 00			313,200 87	.....

NOTE.—Purcell & Ryan having taken contracts for the track-laying and ballasting over this section
This statement of work as executed is a true copy of the return furnished to Chief Engineer's

William to Sunshine Creek.—Contract No. 13.

(while the works executed only cover 32½ miles.)

As executed by Purcell & Ryan.		Total.		Increase.			Decrease.			
Rate.	Amount.	Quan- tities,	Rate.	Amount.	Quan- tities.	Rate.	Amount.	Quan- tities.	Rate.	Amount.
\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.
.....	.....	56 03	20 00	1,120 60	.....	.....	.....	643 97	20 00	12,897 40
.....	.....	58 79	40 00	2,351 60	36 79	40 00	1,471 60	.....	.....	.....
.....	.....	87 95	60 00	5,277 00	.....	.....	.....	26 05	60 00	1,563 00
5 62	95 54	893 74	5 62	5,022 82	693 74	5 62	3,898 82	.....	.....	.....
.....	.....	24 29 1/2	1 25	30,367 50	.....	.....	.....	5,706	1 25	7,132 50
0 50	719 50	41,580	0 50	20,790 00	33,580	0 50	16,790 00	.....	.....	.....
0 23	3,211 26	599,193	0 23	137,814 39	.....	.....	.....	344,807	0 23	79,305 61
.....	.....	103,740	0 05	5,187 00	103,740	0 05	5,187 00	.....	.....	.....
50 00	6,574 00	27,917	0 50	13,958 50	.....	.....	.....	46,083	0 50	23,041 50
.....	.....	3 3,000 00	.....	9,000 00	1 3000 00	.....	3,000 00	.....	.....	.....
.....	.....	2 2,400 00	.....	4,800 00	.....	.....	.....	4 2100 00	.....	9,600 00
.....	.....	1 1,800 00	.....	1,800 00	.....	.....	.....	4 1000 00	.....	4,000 00
.....
.....	.....	3,677	2 25	8,273 25	.....	.....	.....	3,123	2 25	7,026 75
4 00	3,984 00	6,472	4 00	25,888 00	5,272	4 00	21,088 00	.....	.....	.....
0 40	68 80	22,253	0 40	8,901 20	20,953	0 40	8,381 20	.....	.....	.....
.....	.....	7,614	0 35	2,664 90	.....	.....	.....	2,386	0 35	835 10
0 30	128 70	57,440	0 30	17,232 00	.....	.....	.....	42,560	.....	12,768 00
.....	.....	1,346	0 15	201 90	1,346	0 15	201 90	.....	.....	.....
.....	.....	41,648	0 15	6,247 20	41,648	0 15	6,247 20	.....	.....	.....
0 15	122 40	9,516	0 15	1,427 40	95,160	0 15	1,427 40	.....	.....	.....
0 15	103 05	687	0 15	103 05	687	0 15	103 05	.....	.....	.....
.....	.....	7,015	0 15	1,052 25	.....	.....	.....	22,985	0 15	3,447 75
.....	.....	.....	.....	.....	.....	.....	.....	20,000	20 00	400 00
20 00	6 30	37,817	20 00	756 34	27,817	20 00	556 34	5,000	20 00	100 00
.....	.....	49,014	30 00	1,470 42	49,014	30 00	1,470 42	.....	.....	.....
0 10	67 20	55,134	0 10	5,513 40	35,134	0 10	3,513 40	.....	.....	.....
.....	.....	21,896	0 07	1,532 72	18,896	0 07	1,322 72	.....	.....	.....
.....	.....	.....	.....	358 00	.....	.....	358 00	.....	.....	.....
.....	.....	.....	.....	2,258 00	.....	.....	2,258 00	.....	.....	.....
.....	.....	.....	.....	3,142 00	.....	.....	3,142 00	.....	.....	.....
.....	.....	.....	.....	601 31	.....	.....	601 31	.....	.....	.....
.....	.....	50	4 00	200 00	50	4 00	200 00	.....	.....	.....
.....	.....	26	0 23	7 28	26	0 23	7 28	.....	.....	.....
.....	.....	1,775	0 21	372 75	1,775	0 21	372 75	.....	.....	.....
.....	.....	29,936	14 00	419 10	29,936	14 00	419 10	.....	.....	.....
.....	.....	.....	.....	983 10	.....	.....	983 10	.....	.....	.....
.....	.....	.....	.....	1,186 64	.....	.....	1,186 64	.....	.....	.....
.....	.....	.....	.....	1,957 13	.....	.....	1,957 13	.....	.....	.....
.....	.....	350 53	.....	350 53	.....	.....	350 53	.....	.....	.....
.....	.....	54 76	.....	54 76	.....	.....	54 76	.....	.....	.....
.....	.....	1,335 47	.....	1,335 47	.....	.....	1,335 47	.....	.....	.....
.....	.....	18,778 64	.....	331,979 51	.....	.....	88,065 12	.....	.....	162,099 61

were obliged to perform certain of these works. which were done at the same rates as Sifton & Ward.
Office.

W. B. SMELLIE.

MEMO
CANADIAN Pacific Railway—Sunshine Creek to

Description of Work.	As per Schedule.			As executed up to 30th November, 1878.		
	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.
		\$ cts.	\$ cts.		\$ cts.	\$ cts.
Clearing..... Acres	100	25 00	2,500 00	381·15	25 00	9,528 75
Close cutting..... "	50	30 00	1,500 00	123·99	30 00	3,719 70
Grubbing, including side ditches..... "	200	80 00	16,000 00	266·62	80 00	21,329 60
Solid rock excavation..... C. yds	240,000	1 50	360,000 00	76,800	1 50	115,200 00
Loose do..... "	10,000	0 90	9,000 00	110,000	0 90	99,000 00
Earth excavation, includ- ing borrowing..... "	1,000,000	0 33	330,000 00	1,970,000	0 33	650,100 00
Excavation in off-take ditches beyond limits..... "	10,000	0 35	3,500 00			
Under drains, per 100 lineal feet..... L. ft.	60,000	10 00	6,000 00	2,800	10 00	280 00
Line tunnels, 15 cubic yards to lineal foot..... "				7,870	9 00	70,830 00
Widening banks..... "				83,102	0 38	31,578 76
Howe Truss-bridges, 100 feet clear..... Spans	4	4,000 00	16,000 00			
Howe Truss-bridges, 80 feet clear..... "	2	2,800 00	5,600 00	2	2,800 00	5,600 00
Howe Truss-bridges, 60 feet clear..... "	6	2,100 00	12,600 00	1	2,100 00	2,100 00
Howe Truss-bridges, 40 feet clear..... "	6	1,200 00	7,200 00			
Crib-work in abutments and piers..... C. yds	9,000	4 00	36,000 00	2,950	4 00	11,800 00
Rip-rap..... "	2,000	2 50	5,000 00	7,960	2 50	19,900 00
Piles..... L. ft.	5,300	0 25	1,325 00	59,800	0 25	14,950 00
Square timber, 16 × 12..... "	14,000	0 50	7,000 00	18,700	0 50	9,350 00
do 12 × 12..... "	96,000	0 40	38,400 00	91,400	0 40	36,560 00
do 12 × 6..... "	4,000	0 20	800 00	3,900	0 20	780 00
do 9 × 8..... "	45,000	0 20	9,000 00	77,600	0 20	15,520 00
do 9 × 6..... "	28,000	0 18	5,040 00	29,800	0 18	5,364 00
Hemlock or spruce plank, per 1,000 feet..... B. M.	11,000	16 00	176 00			
Pine plank, per 1,000 feet..... "	32,000	20 00	640 00	41,400	20 00	828 00
Hardwood plank do..... "	4,000	20 00	80 00			
Flatted timber, 8 inches..... "				25,300	0 20	5,060 00
Sheet piling..... "				11,200	30 00	336 00
Wrought iron, bolts, spikes, &c..... Lbs.	49,000	0 10	4,900 00	71,600	0 10	7,160 00
Cast iron..... "	10,000	0 10	1,000 00	37,400	0 10	3,740 00
Ties..... Per tie	210,000	0 26	54,600 00	241,000	0 26	62,660 00
Track-laying..... Per mile	112	300 00	33,600 00	102	300 00	30,600 00
Ballasting..... C. yds	180,000	0 38	68,400 00	198,898	0 38	75,581 24
Points and crossings..... Each.	24	50 00	1,200 00	15	50 00	750 00
Total.....			1,037,061 00			1,310,206 05
Add estimate of work to be done.....						74,439 58
Total.....						1,384,645 63

MATERIAL DELIVERED.

Wrought iron..... Lbs.			21,300	0 07	1,491 00
Cast do..... "			7,400	0 07	518 00
Total.....					2,009 00

RANDUM.

English River—Contract No. 25, 19th March, 1879.

Increase.			Decrease.			Estimate of Work to be done.		
Quantities	Rate.	Amount.	Quantities	Rate.	Amount.	Quantities	Rate.	Amount.
	\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.
281.15	25 00	7,028 75						
73.99	30 00	2,219 70						
66.62	80 00	5,329 60						
100,000	0 90	90,000 00	163,000	1 50	244,800 00			
970,000	0 33	320,100 00						
			10,000	0 35	3,500 00			
			57,200	10 00	5,720 00			
78.70	9 00	7,083 00						
83,102	0 38	31,578 76				80,600	0 38	30,628 00
			4	4,000 00	16,000 00			
			5	2,100 00	10,500 00			
			6	1,200 00	7,200 00			
			6,050	4 00	24,200 00			
5,960	2 50	14,900 00						
54,500	0 25	13,625 00						
4,700	0 50	2,350 00						
			4,600	0 40	1,840 00			
			100	0 20	20 00			
32,600	0 20	6,520 00						
1,800	0 18	324 00						
			11,000	16 00	176 00			
9,400	20 00	188 00	4,000	20 00	80 00			
25,300	0 20	5,060 00						
11,200	30 00	336 00						
22,600	0 10	2,260 00						
27,400	0 10	2,740 00						
31,000	0 26	8,060 00				2,600	0 26	520 00
			10	300 00	3,000 00	13.87	300 00	4,161 00
18,998	0 38	7,181 24				100,227	0 38	38,086 26
			9	50 00	450 00	11	50 00	550 00
		590,631 05			317,486 00			73,945 26
Iron and timber as per McLennan's statement								494 32
								74,439 58

This statement of work as executed is a true copy of the return furnished to the Chief Engineer's Office.

(Signed)

W. B. SMELLIE.

MEMO

CANADIAN Pacific Railway—Red River.

LAST ESTIMATE, TO 30TH NOVEMBER, 1878.

Description of Work.	As per Schedule.			Executed by Sifton & Ward.			Quantities.
	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.	
		\$ cts.	\$ cts.		\$ cts.	\$ cts.	
Clearing Acres.	1,000	5 00	5,000 00	214	5 00	1,070 00	.....
Close cutting "	100	40 00	4,000 00	274	40 00	10,960 00	.....
Grubbing, including side ditches "	200	60 00	12,000 00	337	60 00	20,220 00	.....
Fencing Per 100 lin. ft.	200,000	6 00	12,000 00	203,300	6 00	12,198 00	.....
Solid rock excavation C. yds.	10,000	2 00	20,000 00	33,738	2 00	67,476 00	704
Loose do "	3,000	1 00	3,000 00	36,720	1 00	36,720 00	.....
Earth excavation, including borrowing..... "	1,000,000	0 26	260,000 00	1,528,665	0 26	397,452 90	25,766
Excavation in off-take drains beyond railway limits "	40,000	0 23	9,200 00	87,163	0 23	20,047 49	.....
Earth excavation, under water..... "				3,378	0 78	2,634 84	.....
Under drains..... Per 100 lin. ft.	20,000	50 00	10,000 00				.....
Bridges, Howe Truss, 100 ft. clear spans.....	3	4,000 00	12,000 00	3	4,000 00	12,000 00	.....
Bridges, Howe Truss, 80 ft. clear spans.....	1	3,000 00	3,000 00	1	3,000 00	3,000 00	.....
Bridges, Howe Truss, 60 ft. clear spans.....	1	2,500 00	2,500 00	1	2,500 00	2,500 00	.....
Crib work in abutments and piers, including timber and stone filling..... C. yds.	2,500	3 00	7,500 00	2,808	3 00	8,424 00	.....
Rip-rap.....	1,200	4 00	4,800 00	1,325	4 00	5,300 00	.....
Piles driven Lin. ft.	2,400	0 50	1,200 00	25,173	0 50	12,586 50	.....
Timber, square, 16 x 12..... "	6,000	0 60	3,600 00	3,625	0 60	2,175 00	.....
do 12 x 12..... "	55,000	0 40	22,000 00	18,880	0 40	7,552 00	.....
do 12 x 6..... "	1,000	0 25	250 00	60	0 25	15 00	.....
do 9 x 6..... "	2,000	0 25	500 00	6,442	0 25	1,610 50	.....
do 12 x 9..... "				1,664	0 35	582 40	.....
do 9 x 8..... "				11,568	0 30	3,470 40	.....
do 6 x 6..... "				642	0 20	128 40	.....
Flatted timber, 8 in..... "	24,000	0 20	4,800 00	9,267	0 20	1,853 40	.....
Hemlock or spruce plank, per 1,000 ft. B.M.	10,000	50 00	500 00				.....
Pine do	8,000	50 00	400 00	9,924	50 00	496 20	.....
Hardwood plank do	5,000	50 00	250 00	870	50 00	43 50	.....
Wrought iron..... Lbs.	20,000	0 20	4,000 00	22,637	0 20	4,527 40	.....
Cast do "	3,000	0 15	450 00	5,499	0 15	824 85	.....
Extra haul.....						4,783 15	.....
Wages, with 15 per. cent added.....						2,337 21	.....
Timber delivered (see bill).....						1,361 81	.....
Special works, as per account.....						2,784 45	.....
Total.....			402,950 00			647,135 40	.....

ESTIMATE OF WORK TO BE DONE.

Solid rock excavation	5,796	2 00	11,592 00
Earth.....	109,234	0 40	43,693 60
Rip-rap.....	2,000	4 00	8,000 00
Total.....			\$63,285 60

RANDUM.

to Cross Lake—Contract No. 14.

LAST ESTIMATE, TO 28TH FEBRUARY, 1879.

Executed by Jos. Whitehead.		Total by Sifton, Ward and Whitehead.			Increase.			Decrease.		
Rate.	Amount.	Quan- tities.	Rate.	Amount.	Quan- tities.	Rate.	Amount.	Quan- tities.	Rate.	Amount.
\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.
.....	214	5 00	1,070 00	.....	.....	.....	786	5 00	3,930 00
.....	274	40 00	10,960 00	.....	171	40 00	6,960 00	.....	.....
.....	337	60 00	20,220 00	.....	137	60 00	8,220 00	.....	.....
.....	203,300	6 00	12,198 00	.....	3,300	6 00	198 00	.....	.....
2 00	1,408 00	34,442	2 00	68,884 00	.....	24,442	2 00	48,884 00	.....	.....
.....	36,720	1 00	36,720 00	.....	23,720	1 00	33,720 00	.....	.....
0 40	10,306 00	1,528,665	0 26	397,452 90	.....	528,665	0 26	137,452 90	.....	.....
.....	25,766	0 40	10,306 40	.....	25,766	0 40	10,306 40	.....	.....
.....	87,163	0 23	20,047 49	.....	47,163	0 23	10,847 49	.....	.....
.....	3,378	0 78	2,634 84	.....	3,378	0 78	2,634 84	.....	.....
.....	20,000	50 00	10,000 00
.....	3	4,000 00	12,000 00	.....	.....	.....	.....	.....	.....
.....	1	3,000 00	3,000 00	.....	.....	.....	.....	.....	.....
.....	1	2,500 00	2,500 00	.....	.....	.....	.....	.....	.....
.....	2,808	3 00	8,424 00	.....	303	3 00	924 00	.....	.....
.....	1,325	4 00	5,300 00	.....	125	4 00	500 00	.....	.....
.....	25,173	0 50	12,586 50	.....	22,773	0 50	11,386 50	.....	.....
.....	3,625	0 60	2,175 00	.....	.....	.....	2,375	0 60	1,425 00
.....	18,880	0 40	7,552 00	.....	.....	.....	36,120	0 40	14,448 00
.....	60	0 25	15 00	.....	.....	.....	940	0 25	235 00
.....	6,442	0 25	1,610 50	.....	4,442	0 25	1,110 50	.....	.....
.....	1,664	0 35	582 40	.....	1,664	0 35	582 40	.....	.....
.....	11,568	0 30	3,470 40	.....	11,568	0 30	3,470 40	.....	.....
.....	642	0 20	128 40	.....	642	0 20	128 40	.....	.....
.....	9,267	0 20	1,853 40	.....	.....	.....	14,733	0 20	2,946 60
.....	10,000	50 00	500 00
.....	9,924	50 00	496 20	.....	1,924	50 00	96 20	.....	.....
.....	870	50 00	43 50	.....	.....	.....	4,130	50 00	206 50
.....	22,637	0 20	4,527 40	.....	2,637	0 20	527 40	.....	.....
.....	5,499	0 15	824 85	.....	2,499	0 15	374 85	.....	.....
.....	4,783 15	.....	.....	.....	4,783 15	.....	.....
.....	2,337 21	.....	.....	.....	2,337 21	.....	.....
.....	1,361 81	.....	.....	.....	1,361 81	.....	.....
.....	2,784 45	.....	.....	.....	2,784 45	.....	.....
.....	11,714 00	.....	.....	658,849 80	.....	.....	289,590 90	.....	.....	33,691 10

These statements of work as executed are true copies of the returns furnished to the Chief Engineer's Office.

(Signed)

W. B. SMELLIE.

CONTRACT No. 15.—SUTTON,
MEMORANDUM.—Canadian Pacific Railway.—Grading and Bridging, Cross

Description of Work.	As per Schedule on which Contract was based.			As Executed to February, 28th, 1879.		
	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.
		\$ cts.	\$ cts.		\$ cts.	\$ cts.
Clearing..... Acres	500	30 00	15,000 00	126-17	30 00	3,785 10
Close cutting..... "	20	50 00	1,000 00	2-07	50 00	103 50
Grubbing, including side ditches and off-take drains..... "	50	80 00	4,000 00	13-20	80 00	1,056 00
Solid rock excavation..... C. yds	300,000	2 75	825,000 00	342,376	2 75	941,534 00
Loose do..... "	30,000	1 75	52,500 00	46,711	1 75	81,744 25
Earth excavation (including bor- rowing)..... "	80,000	0 37	29,600 00	224,306	0 37	82,993 22
Earth excavation under water..... "				355	1 11	394 05
Excavation in off-take drains beyond railway limits..... "	20,000	0 45	9,000 00	2,264	0 45	1,018 80
Under-drains..... p. 100 l. f.	10,000	55 00	5,500 00	1,058	55 00	581 90
Bridge, Howe Truss..... 40' clear span	1	600 00	600 00			
Line tunnels, 15 c. yds. to lin. ft. L. ft.	425	30 00	12,750 00	332	30 00	9,960 00
Stream do 20 ft., 12 c. y. do .. "	200	26 00	5,200 00			
do 16 8 do .. "	160	18 00	2,880 00			
do 12 4 do .. "	320	14 00	4,480 00			
do 8 2 do .. "	450	9 00	4,050 00	18	9 00	162 00
do 6 1 do .. "	1,300	7 00	9,100 00			
Rip-rap..... C. yds	1,000	2 00	2,000 00			
Bridge masonry..... "	2,400	11 00	26,400 00			
Crib-work, in abutments and piers of bridges .. "	380	2 75	1,045 00	1,070	2 75	2,942 50
Square timber, 16 X 12..... L. ft.	500	0 33	165 00			
do 15 X 12..... "	84,000	0 30	25,200 00			
do 15 X 9..... "	84,000	0 30	25,200 00			
do 12 X 12..... "	1,000	0 30	300 00	27,532	0 30	8,259 60
do 12 X 9..... "	20,000	0 28	5,600 00	220	0 28	61 60
do 12 X 6..... "	140,000	0 28	39,200 00			
do 9 X 9..... "	245,000	0 25	61,250 00			
do 9 X 8..... "	225,000	0 25	56,250 00	1,258	0 25	314 50
do 9 X 6..... "				15,181	0 25	3,795 25
do 9 X 4..... "				1,436	0 20	287 30
do 6 X 4..... "	84,000	0 20	16,800 00			
Piles driven, round timber, 12 X 12 .. "	260,000	0 18	46,800 00			
do 12 X 10 .. "	44,000	0 17	7,480 00			
do 12 X 9 .. "	16,000	0 17	2,660 00			
do 12 X 6 .. "	81,000	0 12	9,720 00			
do 12 X 4 .. "	14,000	0 10	1,400 00			
do 9 X 9 .. "	74,000	0 12	8,880 00			
do 9 X 6 .. "	198,000	0 10	19,800 00			
do 9 X 4 .. "	15,000	0 08	1,200 00			
do 6 X 4 .. "	29,000	0 06	1,740 00			
Flatted timber, 8'..... "	1,000	0 12	120 00	2,605	0 12	312 60
Plank, hemlock or spruce, 1000 f. B. M.	645,000	12 00	7,740 00			
do pine..... "	1,000	25 00	25 00			
do hardwood..... "	1,000	20 00	20 00			
Wrought iron—bolts, spikes..... Lbs.	325,000	0 13	42,250 00	2,100	0 13	273 00
Cast iron..... "	10,000	0 10	1,000 00	3,130	0 10	313 00
Ties..... per tie	270,000	0 40	108,000 00	268,668	0 40	106,667 20
Track-laying..... per mile	116	290 00	33,640 00	69-5	290 00	20,155 00
Ballasting..... C. yds	186,000	0 33	61,380 00	22,946	0 33	7,572 18
Points and crossings..... each	26	10 00	260 00			
Extra haul..... "						
Wages with 15 per cent. added.....						1,096 31
Material delivered.....						204 70
						3,845 40
Total.....			1,594,083 00			1,279,972 86

This Statement of work as executed, is a true copy of
130

THOMPSON & WHITEHEAD.

Lake to Keewatin; Track-laying and Ballasting, Selkirk to Keewatin.

Increase and Decrease.					Work to be done.			Estimate Cost on Completion.		
Quantities Increase.	Quantities Decrease.	Rate.	Amount Increase.	Amount Decrease.	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.
		\$ cts.	\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.
.....	373-83	30 00		11,214 90	23-83	30 00	714 90	150	30 00	4,500 00
.....	17-93	50 00		896 50	7-93	50 00	396 50	10	50 00	500 00
.....	36-80	80 00		2,944 00	11-80	80 00	944 00	25	80 00	2,000 00
42,376	.....	2 75	116,534 00		183,270	2 75	503,992 50	525,616	2 75	1,445,526 50
16,711	.....	1 75	29,244 25		13,289	1 75	23,255 75	60,000	1 75	105,000 00
144,306	.....	0 37	53,393 22		1,433,114	0 37	530 252 18	1,657,420	0 37	613,245 40
355	.....	1 11	394 05					355	1 11	394 05
.....	17,736	0 45		7,981 20	12,736	0 45	5,731 20	15,000	0 45	6,750 00
.....	8,942	55 00		4,918 10	3,942	55 00	2,178 10	5,000	55 00	2,750 00
.....	1,600	00 00		600 00						
.....	93	30 00		2,790 00	44	30 00	1,320 00	376	30 00	11,280 00
.....	200	26 00		5,200 00	200	26 00	5,200 00	200	26 00	5,200 00
.....	160	18 00		2,880 00						
.....	320	14 00		4,480 00	200	14 00	2,800 00	200	14 00	2,800 00
.....	432	9 00		3,888 00	502	9 00	4,518 00	520	9 00	4,680 00
.....	1,300	7 00		9,100 00	1,465	7 00	10,220 00	1,460	7 00	10,220 00
.....	1,000	2 00		2,000 00	1,000	2 00	2,000 00	1,000	2 00	2,000 00
.....	2,400	11 00		26,400 00	2,400	11 00	26,400 00	2,400	11 00	26,400 00
690	.....	2 75	1,897 50					1,070	2 75	2,942 50
.....	500	0 33		165 00						
.....	84,000	0 30		25,200 00						
.....	84,000	0 30		25,200 00	32,882	0 30	9,864 60	60,414	0 30	18,124 20
26,532	.....	0 30	7,959 60		686	0 28	192 08	906	0 28	253 68
.....	19,780	0 28		5,538 40						
.....	140,000	0 28		39,200 00						
.....	245,000	0 25		61,250 00	36,810	0 25	9,202 50	36,810	0 25	9,202 50
.....	223,742	0 25		55,935 50	13,422	0 25	3,355 50	14,680	0 25	3,670 00
.....	15,181	0 25	3,795 50					15,181	0 25	3,795 25
.....	1,436	0 20	287 20		2,916	0 20	583 20	4,353	0 20	870 40
.....	84,000	0 20		16,800 00	3,009	0 50	1,500 00	3,000	0 50	1,500 00
.....	260,000	0 18		46,800 00						
.....	44,000	0 17		7,480 00						
.....	16,000	0 17		2,560 00						
.....	81,000	0 12		9,720 00						
.....	14,000	0 10		1,400 00						
.....	74,000	0 12		8,880 00						
.....	198,000	0 10		19,800 00						
.....	15,000	0 08		1,200 00						
.....	29,000	0 06		1,740 00						
1,605	.....	0 12	192 60					2,605	0 12	312 60
.....	64,500	12 00		7,740 00						
.....	1,000	25 00		25 00	15,578	25 00	389 45	15,578	0 25	389 45
.....	1,000	20 00		20 00	3,680	20 00	73 60	3,680	20 00	73 60
.....	322,900	0 13		41,977 00	26,937	0 13	3,501 81	29,037	0 13	3,774 81
.....	6,870	0 10		687 00	12,885	0 10	1,288 50	16,015	0 10	1,601 50
.....	3,332	0 40		1,332 80	3,335	0 40	1,334 00	270,003	0 40	108,001 20
.....	465,290	00 00		13,485 00	465,290	00 00	13,485 00	116,290	00 00	33,640 00
.....	163,054	0 33		53,807 82	242,678	0 33	80,083 77	265,624	0 33	87,655 95
.....	26	10 00		260 00	26	10 00	260 00	26	10 00	260 00
.....			1,636 31							1,636 31
.....			204 70							204 70
.....			3,845 40							3,845 40
.....										
.....			219,384 08	533,496 22			1,245 07 14			2,525,000 00

the Return furnished to the Chief Engineer's Office.

W. B. SMELLIE.

(Memorandum.)

CONTRACT No. 15.

CANADIAN PACIFIC RAILWAY--Grading and Bridging, Cross Lake to Keowatin; Track-laying and Ballasting, Solkirk to Keowatin.

Description.	MACDONALD & KANE.			MARTIN & CHARLTON.		
	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.
Clearing	150	\$ cts.	\$ gals.		\$ cts.	\$ cts.
Close cutting	10	40 00	6,000 00	130	50 00	7,000 00
Grubbing	25	50 00	500 00	10	25 00	250 00
Solid rock excavation	525,646	100 00	2,500 00	25	100 00	2,500 00
Loose do	60,000	2 25	1,183,703 50	525,846	2 25	1,182,703 50
Earth excavation (including borrow)	1,657,420	1 50	90,000 00	60,000	0 75	45,000 00
Earth excavation, under water	1,657,420	0 35	580,097 00	1,657,420	0 50	828,710 00
Excavation in off-take ditches beyond railway limits	355	1 05	372 75	255	1 50	532 50
Under drains, per 100	15,000	0 25	3,750 00	15,000	0 50	7,500 00
Line tunnels, 15 c. yds.	5,000	1 25	1,250 00	5,000	30 00	1,500 00
Stream do 20 ft. 12 do	376	135 00	50,760 00	376	120 00	45,120 00
do do 12 4 do	200	95 00	19,000 00	200	100 00	20,000 00
do do 8 2 do	520	38 00	19,760 00	520	60 00	31,200 00
do do 6 1 do	1,460	18 00	26,280 00	520	40 00	20,800 00
Rip-rap	2,400	24 00	57,600 00	1,460	25 00	36,500 00
Bridge masonry	1,000	2 00	2,000 00	1,000	1 50	1,500 00
Orb-work in abutments and piers of bridges	2,400	12 00	28,800 00	2,400	16 00	38,400 00
Square timber, 15 X 9	1,070	3 00	3,210 00	1,070	6 00	6,420 00
do do 12 X 9	60,414	0 28	16,915 92	60,414	0 40	24,165 60
do do 9 X 9	906	0 20	181 20	906	0 40	362 40
do do 9 X 8	36,810	0 16	5,889 60	36,810	0 20	7,362 00
do do 9 X 6	14,680	0 16	2,348 80	14,680	0 20	2,936 00
do do 9 X 4	15,181	0 16	2,428 96	15,181	0 20	3,036 20
Piles driven	4,352	0 10	435 20	4,352	0 10	435 20
Platted timber, 8 ft.	3,000	0 50	1,500 00	3,000	0 50	1,500 00
Plank pine, per 1000	2,605	0 12	312 60	2,605	0 12	312 60
do hardwood, per 1000	15,578	30 00	467 34	15,578	30 00	467 34
	3,680	60 00	220 80	3,680	50 00	184 00

Wrought iron.....	29,037	0 13	3,774 81	29,037	0 12	3,484 44
Cast do.....	16,015	0 10	1,601 50	16,015	0 07	1,121 05
Ties.....	270,003	0 28	75,600 84	270,003	0 33	89,100 99
Track-laying.....	116	390 00	34,800 00	116	250 00	29,000 00
Ballasting.....	265,624	0 35	92,968 40	265,624	0 50	132,812 00
Points and crossings.....	26	100 00	2,600 00	26	20 00	520 00
Extra haul.....			1,636 31			1,636 31
Material delivered.....			3,845 40			3,845 40
Wages with 16 p.c. added.....			204 70			204 70
Allowance for haul in earth fillings.....			82,571 00			82,571 00
			2,353,346 63			2,642,293 23
Totals.....			76,364 00			105,000 00
			2,429,710 63			2,747,293 23

These calculations are made at the request of the Committee from the quantities furnished in the evidence of Mr. Marcus Smith. No allowance is made for the masonry of structures. If full allowance be made for this service, the totals will be as follows: —

Masonry in structures.....

(Signed) W. B. SMELLIE

(Memorandum.)

CONTRACT

CANADIAN PACIFIC RAILWAY—Grading and Bridging, Cross Lake to

Description.	Sutton, Thompson & Whitehead.			John A. Green.		
	Quantities	Rate.	Amount.	Quantities	Rate.	Amount.
		\$ cts.	\$ cts.		\$ cts.	\$ cts.
Clearing..... Acres.	150	30 00	4,500 00	150	1 00	150 00
Close cutting..... "	10	50 00	500 00	10	50 00	500 00
Grubbing..... "	25	80 00	2,000 00	25	120 00	3,000 00
Solid rock excavation..... c. yards	525,646	2 75	1,445,526 50	525,646	2 60	1,366,679 60
Loose do..... "	60,000	1 75	105,000 00	60,000	1 00	60,000 00
Earth excavation, including borrow..... "	1,657,420	0 37	613,245 40	1,657,420	0 35	580,097 00
Earth excavation, under water..... "	355	1 71	394 05	355	1 05	372 75
Earth excavation in off-take drain beyond railway limits..... "	15,000	0 45	6,750 00	15,000	0 30	4,500 00
Under drains, per 100..... lin. ft.	5,000	55 00	2,750 00	5,000	30 00	11,500 00
Line tunnels, 15 c. yds..... "	376	30 00	11,280 00	376	120 00	45,120 00
Stream do 20ft. 12 do..... "	200	26 00	5,200 00	200	100 00	20,000 00
do do 12 4 do..... "	200	14 00	2,800 00	200	40 00	8,000 00
do do 8 2 do..... "	520	9 00	4,680 00	520	25 00	13,000 00
do do 6 1 do..... "	1,460	7 00	10,220 00	1,460	15 00	21,900 00
Rip-rap..... c. yards	1,000	2 00	2,000 00	1,000	3 00	3,000 00
Bridge masonry..... "	2,400	11 00	26,400 00	2,400	12 00	28,800 00
Cribwork in abutments and piers..... "	1,070	2 75	2,942 50	1,070	6 00	6,420 00
Square timber, 15x9..... lin. ft.	60,414	0 30	18,124 20	60,414	0 45	27,186 30
do do 12x9..... "	906	0 28	253 68	906	0 36	326 16
do do 9x9..... "	36,810	0 25	9,202 50	36,810	0 26	9,570 60
do do 9x8..... "	14,680	0 25	3,670 00	14,680	0 26	3,816 80
do do 9x6..... "	15,181	0 25	3,795 25	15,181	0 26	3,947 06
do do 9x4..... "	4,352	0 20	870 40	4,352	0 10	435 20
Piles, driven..... "	3,000	0 50	1,500 00	3,000	0 50	1,500 00
Platted timber, 8in..... "	2,605	0 12	312 60	2,605	0 12	312 60
Pine plank, per 1,000..... B. M.	15,578	25 00	389 45	15,578	40 00	623 12
Hardwood plank, per 1,000..... "	3,680	20 00	73 60	3,680	50 00	184 00
Wrought iron bolts and spikes..... Lb.	29,037	0 13	3,774 81	29,037	0 08	2,322 96
Cast iron bolts and spikes..... "	16,015	0 10	1,601 50	16,015	0 07	1,121 05
Ties..... each.	270,003	0 40	108,001 20	270,003	0 30	81,000 90
Track-laying..... mile.	116	290 00	33,640 00	116	300 00	34,800 00
Ballasting..... c. yards	265,624	0 33	87,655 92	265,624	0 38	100,937 12
Points and crossings..... each.	26	10 00	260 00	26	25 00	650 00
Extra haul..... "			1,636 31			1,636 31
Wages with 15 p. ct. added..... "			204 70			204 70
Material delivered..... "			3,845 40			3,845 00
Allowance for haul in earth fillings..... "						82,871 00
These calculations are made at the request of the Committee from the quantities furnished in the evidence of Mr. Marcus Smith. No allowance is made for the masonry of structures. If full allowance be made for this service, the totals will stand as follows :			2,525,000 00			2,520,330 63
Masonry in structures..... "			70,000 00			76,364 00
Totals..... "			2,575,000 00			2,596,694 63

No. 15.

Keewatin; Track-laying and Ballasting, Selkirk to Keewatin.

Talbot & Jones.			D. Hinkson.			A. Farewell.		
Quantities	Rate.	Amount.	Quantities	Rate.	Amount.	Quantities	Rate.	Amount.
	\$ cts.	\$ cts.		\$ cts.	\$ cts.		\$ cts.	\$ cts.
150	50 00	7,500 00	150	0 20	30 00	150	1 00	150 00
10	80 00	800 00	10	40 00	400 00	10	40 00	400 00
25	150 00	3,750 00	25	60 00	1,500 00	25	60 00	1,500 00
525,616	2 50	1,314,115 00	525,616	2 75	1,445,526 50	525,616	2 75	1,445,526 50
60,000	1 50	90,000 00	60,000	0 75	45,000 00	60,000	1 00	60,000 00
1,657,420	0 40	662,968 00	1,657,420	0 30	497,226 00	1,657,420	0 30	497,226 00
355	1 20	426 00	355	0 90	319 50	355	0 90	319 50
15,000	0 40	6,000 00	15,000	0 27	4,050 00	15,000	0 30	4,500 00
5,000	250 00	12,500 00	5,000	40 00	2,000 00	5,000	50 00	2,500 00
376	75 00	28,200 00	376	60 00	22,560 00	376	60 00	22,560 00
200	50 00	10,000 00	200	50 00	10,000 00	200	50 00	10,000 00
200	30 00	6,000 00	200	30 00	6,000 00	200	25 00	5,000 00
520	20 00	10,400 00	520	20 00	10,400 00	520	20 00	10,400 00
1,460	15 00	21,900 00	1,460	10 00	14,600 00	1,460	12 00	17,520 00
1,000	2 00	2,000 00	1,000	3 50	3,500 00	1,000	4 00	4,000 00
2,400	16 00	38,400 00	2,400	18 00	43,200 00	2,400	20 00	48,000 00
1,070	4 00	4,280 00	1,070	6 00	6,420 00	1,070	5 00	5,350 00
60,414	0 34	20,540 76	60,414	0 40	24,165 60	60,414	0 45	27,186 30
906	0 30	271 80	906	0 30	271 80	906	0 35	317 10
36,810	0 20	7,362 00	36,810	0 25	9,202 50	36,810	0 30	11,043 00
14,680	0 15	2,202 00	14,680	0 25	3,670 00	14,680	0 30	4,404 00
15,181	0 15	2,277 15	15,181	0 25	3,795 25	15,181	0 30	4,554 30
4,352	0 15	652 80	4,352	0 15	652 80	4,352	0 20	870 40
3,000	0 50	1,500 00	3,000	0 50	1,500 00	3,000	0 50	1,500 00
2,605	0 12	312 60	2,605	0 12	312 60	2,605	0 12	312 60
15,578	50 00	778 90	15,578	50 00	778 90	15,578	50 00	778 90
3,680	50 00	184 00	3,680	80 00	294 40	3,680	80 00	294 40
29,037	0 10	2,903 70	29,037	0 15	4,355 55	29,037	0 18	5,226 66
16,015	0 10	1,601 50	16,015	0 12	1,921 80	16,015	0 15	2,402 25
270,003	0 50	135,001 50	270,003	0 27	72,900 81	270,003	0 30	81,000 90
116	400 00	46,400 00	116	350 00	40,600 00	116	375 00	43,500 00
265,624	0 75	199,218 00	265,624	0 33	87,655 92	265,624	0 38	100,937 12
26	20 00	520 00	26	50 00	1,300 00	26	50 00	1,300 00
		1,636 31			1,636 31			1,636 31
		204 70			204 70			204 70
		3,845 40			3,845 40			3,845 40
		82,871 00			82,871 00			82,871 00
		2,729,523 12			2,457,637 34			2,509,137 34
		101,818 00			114,545 00			127,272 00
		2,831,341 12			2,572,182 34			2,636,409 34

*Add for apparent error in rate for clearing.

W. B. SMELLIE.

CONTRACT No. 33.

CANADIAN PACIFIC RAILWAY (Pembina Branch)—Grading, Bridging and Track-laying, between St. Boniface and Emerson, 62½ miles.—Tenders for Works.—Schedule of Quantities and Prices.

Approximate Quantities.	Description of Work.	Kavanagh, Murphy & Upper.		C. C. Couvrette.		L. Z. Mallette.		John Ryan.		A. Charlebois.		Joseph Whitehead.		Wardrop & Ross.		John W. Sifton.		James I. Lester.		John Honey.		Murphy & Upper.		Sutton & Rouseaux.		Wm. D. Barclay.		Wanless & McIntosh.		Robinson & Robinson.	
		Rate.	Amount.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.
		\$ cts.	\$ cts.	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$
100	Acres, Clearing.....per acre	24 00	2,400 00	15 00	1,500	10 00	1,000	2 00	200	10 00	1,000	20 00	2,000	15 00	1,500	25 00	2,500	20 00	2,000	5 00	500	15 00	1,500	12 00	1,200	25 00	2,500	17 50	1,750	30 00	3,000
50	" Close cutting....."	28 00	1,400 00	20 00	1,000	30 00	1,500	2 00	100	30 00	1,500	30 00	1,500	15 00	750	40 00	2,000	40 00	2,000	3 00	150	30 00	1,500	12 00	600	40 00	2,000	25 00	1,250	15 00	750
100	" Grubbing (including side ditches and off-take drains)....."	50 00	5,000 00	20 00	2,000	25 00	2,500	5 00	500	25 00	2,500	80 00	8,000	100 00	10,000	60 00	6,000	80 00	8,000	6 00	600	40 00	4,000	40 00	4,000	160 00	16,000	60 00	6,000	150 00	15,000
666,600	Lineal ft., Fencing.....per 100 l. ft.	5 00	33,300 00	9 00	5,904	7 00	46,620	1 10	7,326	10 00	6,660	6 00	39,960	8 00	53,280	8 00	53,280	8 00	53,280	6 00	600	40 00	4,000	40 00	4,000	160 00	16,000	60 00	6,000	150 00	15,000
100	Cub. yds., Loose rock excavation.....per c. yd.	2 50	250 00	1 00	100	2 50	250	1 00	100	3 00	300	1 00	100	0 60	60	2 00	200	0 75	75	1 00	100	0 30	30	0 90	90	1 00	100	0 25	25	150 00	150
140,000	Earth excavation (including borrowing)....."	0 25	35,000 00	0 20	28,000	0 23	32,200	0 23	32,200	0 23	32,200	0 22	30,800	0 25	35,000	0 25	35,000	0 24	33,600	0 25	35,000	0 25	35,000	0 25	35,000	0 26	36,400	0 23	31,200	0 30	42,000
10,000	Excavation in off-take ditches beyond railway limits....."	6 30	3,000 00	0 20	2,000	0 23	2,300	0 25	2,500	0 23	2,300	0 33	3,300	0 20	2,000	0 25	2,500	0 27	2,700	0 23	2,300	0 21	2,100	0 25	2,500	0 26	2,600	0 20	2,000	0 40	4,000
1,000	Lineal-ft., Under-drains.....per 100 l. ft.	25 00	250 00	15 00	150	20 00	200	20 00	200	20 00	200	0 40	400	30 00	300	25 00	250	33 00	330	50 00	500	30 00	300	60 00	600	25 00	25,000	50 00	500	50 00	5,000
2	Spans, Howe truss, 100 ft. clear.....per span	3,000 00	6,000 00	3,200 00	6,400	3,500 00	7,000	4,000 00	8,000	3,500 00	7,000	2,160 00	4,320	3,500 00	7,000	3,700 00	7,400	4,500 00	9,000	5,500 00	11,000	4,700 00	9,400	3,950 00	7,900	3,600 00	7,200	3,800 00	7,600	40 00	8,000
1	" 80 "....."	2,500 00	2,500 00	2,400 00	2,400	2,500 00	2,500	3,000 00	3,000	2,500 00	2,500	3,520	2,160 00	2,160	2,800 00	2,800	2,880 00	2,880	4,400 00	4,400	4,400 00	4,400	3,500 00	3,750	2,800 00	2,800	3,050 00	3,050	40 00	3,200	
1	" 60 "....."	1,750 00	1,750 00	1,500 00	1,500	1,800 00	1,800	2,000 00	2,000	1,800 00	1,800	2,040	1,440 00	1,440	2,500 00	2,500	2,500 00	2,500	3,360 00	3,360	2,300 00	2,300	2,300 00	2,300	2,000 00	2,000	2,280 00	2,280	30 00	1,800	
2,500	Cub. yds., Cribwork in abutments and piers of bridges, including timber and stone filling.....per c. yd.	3 50	8,750 00	3 00	7,500	3 50	8,750	6 00	15,000	3 50	8,750	5 00	12,500	5 00	12,500	4 00	10,000	4 50	11,250	7 50	18,750	4 00	10,000	4 00	10,000	4 00	10,000	7 50	18,750	6 00	15,000
1,000	Rip-rap....."	1 50	1,500 00	1 30	1,000	1 50	1,500	3 00	3,000	1 50	1,500	3 00	3,000	3 00	3,000	3 00	3,000	3 50	3,500	5 00	5,000	3 00	3,000	3 00	3,000	2 00	2,000	3 00	3,000	4 00	15,000
	Bridge masonry in hydraulic cement mortar....."	15 00		15 00		15 00		15 00		16 00		18 00			18 00		14 00		14 00		27 00		11 50		25 00		18 00		16 00		
	" in common lime mortar, lipped with cement....."	15 00		13 00		13 00		14 00		14 00		16 50			14 00		13 00		13 00		27 00		11 00		20 00		14 00		12 00		
	Culvert masonry in hydraulic cement mortar....."	12 00		15 00		17 00		12 00		18 00		17 00			16 00		12 00		12 00		17 00		6 50		20 00		7 50		16 00		
	" in common lime mortar, lipped with cement....."	10 00		13 00		15 00		11 00		16 00		16 00			14 00		11 00		11 00		17 00		6 00		18 00		7 00		10 00		
	" Dry....."	8 00		11 00		11 00		10 00		12 00		14 00			8 00		9 00		9 00		12 00		4 50		15 00		10 00		10 00		
	Brickwork in hydraulic cement mortar....."	12 50		12 00		12 00		10 00		12 00		19 00			16 00		16 00		11 00		11 00		12 00		15 00		10 00		18 00		
	" in common lime mortar, lipped with cement....."	11 00		10 00		9 50		9 00		10 00		17 50			15 00		10 00		10 00		11 50		11 50		22 00		9 00		8 00		
	Concrete made with hydraulic cement....."	10 00		6 00		6 25		9 00		5 00		5 00			14 00		14 00		14 00		11 00		5 00		7 50		6 00		12 00		
	Clay puddle....."	2 00		0 90		1 25		0 75		1 25		0 75			2 00		1 50		1 50		0 75		2 25		2 00		0 50		0 50		
2,500	Lineal ft. Piles—Tamarack or oak of size to square 12 inches at large end.....per l. ft.	0 40	1,000 00	0 55	1,375	0 60	1,500	0 50	1,250	0 60	1,500	0 40	1,000	0 35	875	0 50	1,250	0 55	1,375	0 50	1,250	0 56	1,400	0 45	1,125	0 25	625	0 50	1,250	1 00	2,500
	Squared timber in trestle-work, bridges, culverts, &c.....																														
2,500	Lineal ft., 16 inches by 12 inches, white pine.....per l. ft.	0 50	1,250 00	0 45	1,125	0 50	1,250	0 60	1,500	0 50	1,250	0 50	1,250	0 40	1,000	0 60	1,500	0 55	1,375	0 48	1,200	0 70	1,750	0 53	1,375	0 32	800	0 64	1,600	0 45	1,325
2,000	Lineal ft., 15 in. by 12 in. white pine....."	0 50	1,000 00	0 45	900	0 45	900	0 56	1,120	0 45	900	0 48	960	0 36	720	0 50	1,000	0 55	1,100	0 45	900	0 63	1,360	0 50	1,000	0 34	600	0 60	1,200	0 15	300
2,500	" 15 " by 9 "....."	0 40	1,000 00	0 35	875	0 40	1,000	0 43	1,075	0 40	1,000	0 40	1,000	0 32	800	0 40	1,000	0 30	750	0 45	900	0 61	1,325	0 40	1,000	0 24	600	0 45	1,125	0 40	1,000
38,000	" 12 " by 12 " white pine or tamarack....."	0 35	13,300 00	0 30	11,000	0 30	13,300	0 45	17,100	0 35	13,300	0 40	15,200	0 30	11,000	0 40	15,200	0 40	15,200	0 36	13,680	0 50	21,280	0 45	17,100	0 24	9,120	0 18	15,240	0 10	15,200
4,000	" 12 " by 9 "....."	0 26	1,000 00	0 20	800	0 30	1,200	0 34	1,360	0 30	1,200	0 38	1,520	0 28	1,120	0 35	1,400	0 28	1,120	0 27	1,080	0 51	2,040	0 40	1,600	0 18	720	0 36	1,440	0 40	1,600
14,000	" 9 " by 8 "....."	0 18	2,520 00	0 20	2,800	0 20	2,800	0 23	3,220	0 20	2,800	0 20	4,200	0 20	2,800	0 25	3,500	0 25	3,500	0 21	2,910	0 34	4,760	0 30	4,200	0 12	1,680	0 24	3,360	0 30	4,200
15,000	Lineal ft., 12 in. by 12 in. may be spruce.....lnl. ft.	0 35	5,250 00	0 25	3,750	0 30	4,500	0 45	6,750	0 30	4,500	0 30	4,500	0 30	4,500	0 40	6,000	0 40	6,000	0 36	5,400	0 50	7,500	0 30	4,500	0 20	3,000	0 45	6,750	0 10	6,750
7,000	" 12 " by 9 "....."	0 25	1,750 00	0 20	1,400	0 25	1,750	0 31	2,380	0 25	1,750	0 30	2,100	0 20	1,400	0 25	1,750	0 28	1,960	0 25	1,750	0 28	1,960	0 27	1,890	0 15	1,050	0 30	2,520	0 35	2,520
1,500	" 12 " by 6 "....."	0 18	270 00	0 16	210	0 15	225	0 23	315	0 15	225	0 25	375	0 18	270	0 20	300	0 25	375	0 21	315	0 31	465	0 22	330	0 10	150	0 24	360	0 30	450
1,000	" 12 " by 4 "....."	0 12	120 00	0 12	120	0 12	120	0 15	150	0 12	120	0 20	240	0 12	120	0 20	240	0 16	160	0 14	140	0 22	220	0 18	180	0 06	60	0 16	160	0 25	250
500	" 9 " by 9 "....."	0 21	105 00	0 20	100	0 20	100	0 25	125	0 20	100	0 30	150	0 18	90	0 30	150	0 25	125	0 24	120	0 32	160	0 22	110	0 10	50	0 27	135	0 30	150
4,000	" 9 " by 6 "....."	0 15	600 00	0 14	560	0 15	600	0 17	680	0 15	600	0 20	800	0 16	640	0 30	1,200	0 18	720	0 16	640	0 30	1,200	0 20	800	0 07	280	0 20	800	0 25	1,000
1,000	" 9 " by 4 "....."	0 10	100 00	0 10	100	0 12	120	0 15	150	0 12	120	0 20	200	0 10	100	0 20	200	0 12	120	0 10	100	0 20	200	0 12	120	0 05	50	0 12	120	0 25	250
1,000	" 6 " by 4 "....."	0 10	100 00	0 10	100	0 10	100	0 15	150	0 10	100	0 15	150	0 08	80	0 15	150	0 09	90	0 08	80	0 17	170	0 10	100	0 03	30	0 08	80	0 20	200
500	" 4 " by 2 " oak scantling....."	0 03	17 50	0 08	40	0 12	60	0 10	50	0 12	60	0 10	50	0 05	20	0 10	50	0 03	15	0 04	20	0 20	100	0 07	35	0 05	25	0 06	30	0 20	100
22,000	" 10 " flatted timber, may be spruce....."	0 15	3,300 00	0 10	2,200	0 10	2,200	0 20	4,400	0 10	2,200	0 25	5,500	0 14	3,080	0 30	6,000	0 20	4,400	0 27	5,940	0 38	8,360	0 12	2,640	0 05	1,100	0 34	7,260	0 30	6,600
10,000	" 8 " "....."	0 10	1,000 00	0 08	800	0 10	1,000	0 20	2,000	0 10	1,000	0 25	2,500	0																	

Date of receipt of Tenders, 1st March, 1878.

Certified a true copy.

(Signed) F. BRAUN,
Secretary.

CONTRACT No. 13.

CANADIAN PACIFIC RAILWAY—Fort William to Shebandowan—Tender for Works—Schedule of Quantities and Prices.

Approximate Quantities	Description of Work.	Ferguson & Miller.		R. S. Archibald.		Jas. Bristow.		Jos. Whitehead.		J. G. Steacy.		Henry Sifton.		Patrick Shannon.		Purcell, Lynch & Co.		Alex. Manning.		Murdock & McLellan.		G. W. Taylor.		Melville.
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
		\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.
700	Acres clearing..... per acre.	30 00	21,000	16 00	11,200	60 00	42,000	20 00	14,000	25 00	17,500	20 00	14,000	45 00	31,500 00	30 00	21,000	20 00	14,000	20 00	14,000	17 50	12,250	22 00
22	do close-cutting..... do	45 00	990	45 00	990	130 00	2,880	25 00	550	30 00	660	40 00	880	20 00	440 00	30 00	660	30 00	660	20 00	440	20 00	440	22 00
114	do grubbing (including side-ditches)..... do	160 00	18,240	100 00	11,400	240 00	27,360	160 00	18,240	80 00	9,120	60 00	6,840	45 00	5,130 00	125 00	14,250	100 00	11,400	75 00	8,550	50 00	5,700	55 00
20,000	Lineal feet fencing..... per 100 l. ft.	7 00	1,400	6 00	1,200	14 00	2,800	6 00	1,200	8 00	1,600	5 62	1,124	7 20	1,440 00	10 00	2,000	12 00	2,400	10 00	2,000	4 50	900	5 00
30,000	Cubic yards solid rock excavation..... per a. yd.	1 60	48,000	1 50	45,000	1 25	37,500	2 50	75,000	1 25	37,500	1 70	51,000	1 70	51,000 00	1 90	57,000	2 00	60,000	1 35	40,500	1 80	54,000	1 90
8,000	do loose..... do	1 00	8,000	0 75	6,000	0 60	4,800	0 75	4,800	0 40	3,200	0 50	4,000	1 10	8,500 00	1 00	8,000	1 00	8,000	0 60	4,800	0 80	6,400	0 90
944,000	do earth excavation..... do	0 29 1/2	278,480	0 33	311,520	0 32	302,080	0 36	339,840	0 26	245,440	0 23	217,120	0 48	453,120 00	0 40	377,600	0 33	311,500	0 26	245,440	0 25	236,000	0 20
74,000	Lineal feet under-drains..... per 100 l. ft.	15 00	11,100	12 00	8,880	20 00	14,800	12 00	8,880	36 00	28,640	50 00	37,000	9 44	6,985 60	20 00	14,800	40 00	29,600	12 50	9,250	14 00	10,360	15 00
2 spans.	100 feet clear, Howe truss bridges..... per span.	40 00	8,000	2,000 00	4,000	4,500 00	9,000	5,000 00	10,000	2,700 00	5,400	3,000 00	6,000	3,200 00	6,400 00	6,000 00	12,000	5,000 00	10,000	4,000 00	8,000	2,150 00	4,300	2,500 00
6 do	80 do..... do	35 00	16,800	1,600 00	9,600	3,500 00	21,000	3,960 00	23,760	1,920 00	11,520	2,400 00	14,400	2,400 00	14,400 00	5,500 00	33,000	4,000 00	24,000	3,750 00	22,500	1,750 00	10,500	2,000 00
1 do	60 do..... do	30 00	1,800	1,200 00	1,200	2,500 00	2,500	2,700 00	2,700	1,320 00	1,320	1,800 00	1,800	1,680 00	1,680 00	5,000 00	3,000 00	3,000	3,500 00	3,500	1,400	1,400	1,400	1,400
4 do	40 do..... do	25 00	4,000	1,000 00	4,000	1,500 00	6,000	1,800 00	7,200	800 00	3,200	1,000 00	4,000	1,000 00	4,160 00	4,000 00	16,000	1,500 00	6,000	3,250 00	13,000	1,050 00	4,200	1,100 00
6,800	Cubic yards cribwork in abutments and piers of bridges (including timber and stone filling)..... per c. yd.	5 00	34,000	1 00	6,800	4 50	30,600	5 70	38,760	3 00	23,800	2 25	15,300	3 00	20,400 00	5 50	37,400	7 00	47,600	3 00	20,400	2 00	13,600	2 00
1,200	Cubic yards rip-rap..... do	4 75	5,700	3 00	3,600	4 00	4,800	2 00	2,400	1 25	1,500	4 00	4,800	6 00	7,200 00	4 00	4,800	4 00	4,800	3 25	3,900	2 25	2,700	2 25
1,300	Lineal feet piles..... per l. ft.	0 50	650	0 30	390	0 20	260	0 50	650	0 30	390	0 40	520	0 50	650 00	1 50	1,950	1 00	1,300	0 35	455	0 40	520	0 40
10,000	do timber, 16 inches by 12 inches, stringers for trestle bridges and culverts..... do	0 35	3,500	0 20	2,000	0 64	6,400	0 55	5,500	0 20	2,000	0 35	3,500	0 45	4,500 00	0 53	5,500	1 20	12,000	0 37	3,700	0 28	2,800	0 30
100,000	Lineal feet timber, 12 inches square, in trestle bridges, culverts and cattle guards..... do	0 25	25,000	0 16	16,000	0 48	48,000	0 45	45,000	0 18	18,000	0 30	30,000	0 40	40,000 00	0 45	45,000	0 40	40,000	0 35	35,000	0 25	25,000	0 20
30,000	Lineal feet 8-inch flatted timber, in trestle bridges, culverts and cattle guards..... do	0 15	4,500	0 08	2,400	0 14	4,200	0 35	10,500	0 10	3,000	0 15	4,500	0 20	6,000 00	0 30	9,000	0 20	6,000	0 10	3,000	0 09	2,700	0 10
20,000	Feet B.M., hemlock or spruce plank..... per 1,000 ft. B.M.	30 00	600	20 00	400	25 00	500	35 00	7,000	15 00	300	20 00	400	20 00	400 00	25 00	500	50 00	1,000	20 00	400	25 00	500	25 00
10,000	Feet B.M., pine plank..... do	35 00	350	25 00	250	30 00	300	40 00	4,000	20 00	200	20 00	200	25 00	250 00	30 00	300	70 00	700	23 00	230	25 00	250	25 00
5,000	do hardwood plank..... do	100 00	500	20 00	100	35 00	175	40 00	2,000	30 00	150	20 00	100	30 00	150 00	50 00	250	80 00	400	25 00	125	40 00	200	40 00
20,000	Lbs. wrought iron, including bolts, spikes, straps, &c..... per lb.	0 13	2,600	0 08	1,600	0 05 1/2	1,100	0 12	2,400	0 08	1,600	0 10	2,000	0 10	2,000 00	0 20	4,000	0 20	4,000	0 12 1/2	2,500	0 12 1/2	2,500	0 10
3,000	Lbs. cast iron..... do	0 08	240	0 05	150	0 04 1/2	135	0 06	180	0 04	120	0 07	210	0 08	240 00	0 20	600	0 15	450	0 10	300	0 10	300	0 10
	Total amount.....		495,450		448,680		569,170		625,760		414,150		406,194		666,845 60		670,610		598,830		441,990		397,520	

Approximate Quantities	Description of Work.	E. A. Charters & Co.		Wm. Jennings.		John Wardrop.		A. McBean & Co.		H. McK. Sutherland.		John Elliott & Co.		Thos. Dumble.		Alex. Wallace.		A. Brown.		Chas. H. Lewis.		O. A. Rocque.		Hughes.
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
		\$ cts.	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	
700	Acres clearing..... per acre.	17 00	11,900	25 00	17,500 00	20 00	14,000	20 00	14,000	20 00	14,000 00	25 00	17,500	40 00	28,000	80 00	56,000	27 00	18,900	200 00	140,000	80 00	42,000	30 00
22	do close-cutting..... do	30 00	660	35 00	770 00	15 00	330	20 00	440	20 00	440 00	60 00	1,320	100 00	2,200	90 00	1,800	12 00	280	400 00	8,800	60 00	1,320	25 00
114	do grubbing (including side-ditches)..... do	25 00	2,850	250 00	28,500 00	140 00	15,960	200 00	22,800	50 00	5,700 00	150 00	17,100	200 00	22,800	110 00	12,540	140 00	15,960	200 00	22,800	200 00	22,800	60 00
20,000	Lineal feet fencing..... per 100 l. ft.	3 00	600	8 50	1,700 00	5 00	1,000	6 75	1,350	6 00	1,200 00	2 00	400	10 00	2,000	6 50	1,300	6 00	1,200	20 00	4,000	10 00	8,000	10 00
30,000	Cubic yards solid rock excavation..... per c. yd.	1 00	30,000	1 50	45,000 00	1 15	34,500	1 65	49,500	1 30	57,000 00	2 00	60,000	3 50	105,000	2 25	67,500	2 00	60,000	2 00	60,000	2 25	67,500	1 30
8,000	do loose..... do	0 60	4,800	1 20	9,600 00	0 40	3,200	0 90	7,200	0 90	7,200 00	1 05	9,200	1 50	12,900	1 25	16,000	1 00	8,000	0 75	6,000	1 25	10,000	0 80
944,000	do earth excavation..... do	0 23	217,120	0 27	254,880 00	0 26	245,440	0 32	301,080	0 26	245,440 00	0 40	377,600	0 39	424,800	0 45	424,800	0 39	368,160	0 25	236,000	0 50	472,000	0 20
74,000	Lineal feet under-drains..... per 100 l. ft.	11 00	8,140	130 00	22,200 00	15 00	11,100	20 00	14,800	15 00	11,100 00	30 00	2,200	15 00	11,100	20 00	14,800	16 00	11,800	4 00	2,960	10 00	20,600	20 00
2 spans.	100 feet clear, Howe truss bridges..... per span.	3,000 00	6,000	5,040 00	10,080 00	4,060 00	8,000	4,060 00	8,000	2,227 16	4,154 32	5,000 00	10,000	3,000 00	7,000	4,500 00	9,000	3,000 00	6,000	4,000 00	8,000	5,000 00	10,000	3,240 00
6 do	80 do..... do	2,400 00	14,400	3,580 00	21,480 50	2,800 00	16,800	2,400 00	11,400	1,855 97	11,135 82	4,600 00	21,600	2,800 00	16,800	3,200 00	19,200	2,600 00	12,000	3,000 00	18,600	4,000 00	24,000	2,436 00
1 do	60 do..... do	1,500 00	1,500	2,432 00	2,432 00	1,680 00	1,680	1,500 00	1,500	1,481 78	1,481 78	3,600 00	3,000	1,800 00	1,800	2,280 00	2,280	1,500 00	1,500	2,500 00	2,500	2,400 00	2,400	1,742 00
4 do	40 do..... do	1,000 00	4,000	1,410 00	5,640 00	920 00	3,680	600 00	2,400	1,113 58	4,454 32	2,000 00	8,000	1,000 00	4,000	1,440 00	5,760	1,000 00	4,000	1,800 00	7,200	1,600 00	6,400	1,104 00
6,800	Cubic yards cribwork in abutments and piers of bridges (including timber and stone filling)..... per c. yd.	2 00	13,600	5 00	34,000 00	3 00	20,400	1 25	8,500	2 00	13,600 00	6 00	43,800	4 00	27,200	4 50	30,600	4 50	30,600	2 00	13,600	5 00	34,000	7 00
1,200	Cubic yards rip-rap..... do	1 50	1,800	5 50	6,600 00	2 00	2,400	2 00	2,400	2 50	3,000 00	4 00	4,800	4 00	4,800	2 75	3,300	2 00	2,400	1 00	1,200	3 50	4,200	3 00
1,300	Lineal feet piles..... per l. ft.	0 20	260	0 35	455 00	0 40	520	0 40	520	0 40	520 00	0 50	650	0 50	650	0 55	715	0 50	650	0 40	520	0 40	520	0 40
10,000	do timber, 16 inches by 12 inches, stringers for trestle bridges and culverts..... do	0 40	4,000	0 40	4,000 00	0 35	3,500	0 45	4,500	0 28	2,800 00	0 50	5,000	0 40	4,000	0 64	6,400	0 45	4,500	0 30	3,000	0 68	6,800	0 60
100,000	Lineal feet timber, 12 inches square, in trestle bridges, culverts and cattle guards..... do	0 23	23,000	0 16	16,000	0 48	48,000	0 45	45,000	0 18	18,000	0 30	30,000	0 40	40,000 00	0 45	45,000	0 4						

CONTRACT No. 13.

208

CANADIAN PACIFIC RAILWAY—Fort William to Shebandowan—Tender for Works—Schedule of Quantities and Prices.

J. G. Steacy.		Henry Sifton.		Patrick Shannon.		Purcell, Lynch & Co.		Alex. Manning.		Murdock & McLellan.		G. W. Taylor.		Melville Miller.		A. Carmichael.		O. English.		Geo. Harvey.		McName, Gaherty & Co.		D. McDonald.		Jas. Rowe.	
Qty.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.
25 00	17,500	20 00	14,000	45 00	31,500 00	30 00	21,000	20 00	14,000	20 00	14,000	17 50	12,250	22 00	15,400	25 00	17,500	25 00	17,500	30 00	21,000	40 00	28,000	25 00	17,350	22 00	15,400
00 00	660	40 00	880	20 00	440 00	30 00	660	30 00	660	20 00	440	20 00	440	22 00	484	35 00	770	32 00	704	40 00	880	50 00	1,100	30 00	660	40 00	880
00 00	9,120	60 00	6,840	45 00	5,130 00	125 00	14,250	100 00	11,400	75 00	8,550	50 00	5,700	55 00	6,270	250 00	28,500	300 00	34,200	125 00	14,250	60 00	6,840	100 00	11,400	160 00	18,240
00 00	1,000	5 00	1,124	7 20	1,440 00	10 00	2,000	12 00	2,400	10 00	2,000	4 50	900	5 00	1,060	9 00	1,800	9 00	1,800	10 00	2,000	10 00	2,000	15 00	30,000	7 00	1,460
00 00	37,500	1 25	37,500	1 70	51,000 00	1 95	57,000	2 00	60,000	1 35	40,500	1 80	54,000	1 95	58,500	3 00	90,000	1 55	46,500	1 30	39,000	1 25	37,500	1 50	45,000	1 25	37,500
00 00	3,200	0 50	4,000	1 10	8,800 00	1 00	8,000	1 00	8,000	0 60	4,800	0 80	6,400	0 90	7,200	1 50	12,000	1 30	10,400	0 90	7,200	1 00	8,000	0 60	4,800	0 80	6,400
00 00	245,440	0 23	217,120	0 48	453,120 00	0 40	377,600	0 33	311,520	0 26	245,440	0 25	236,000	0 26	250,160	0 30	283,200	0 28	264,320	0 28	271,400	0 30	283,200	0 33	311,520	0 33	311,520
00 00	26,614	50 00	37,000	9 44	6,985 60	20 00	14,800	40 00	29,600	12 50	9,250	14 00	10,360	15 00	11,100	20 00	14,800	30 00	22,200	35 00	25,900	20 00	14,800	20 00	14,800	35 00	25,900
00 00	5,400	3,000 00	6,000	3,200 00	6,400 00	6,000 00	12,000	5,000 00	10,000	4,000 00	8,000	2,150 00	4,300	2,500 00	5,000	3,000 00	6,000	5,200 00	10,400	5,000 00	10,000	5,000 00	10,000	3,000 00	6,000	37,000	7,400
00 00	11,520	2,400 00	14,400	2,400 00	14,400 00	5,500 00	33,000	4,000 00	24,000	3,750 00	22,500	1,750 00	10,500	2,000 00	12,000	2,400 00	14,400	3,400 00	20,400	4,000 00	24,000	3,200 00	19,200	3,000 00	14,400	30 00	14,400
00 00	1,320	1,800 00	1,800	1,650 00	1,650 00	5,000 00	5,000	3,000 00	3,000	3,500 00	3,500	1,400	1,400	1,400	1,800 00	1,800	2,000 00	2,000	3,600 00	3,600 00	11,200	1,520 00	3,000 00	1,200	20 00	3,200	
00 00	3,260	1,000 00	4,000	1,010 00	4,160 00	4,000 00	16,000	1,500 00	6,000	3,250 00	13,000	1,050 00	4,200	1,100 00	4,400	1,000 00	4,000	1,320 00	5,280	2,800 00	11,200	1,520 00	3,000 00	1,200	20 00	3,200	
00 00	23,800	2 25	15,300	3 00	20,400 00	5 50	37,400	7 00	47,600	3 00	20,400	2 00	13,600	2 00	13,600	5 00	34,000	6 00	40,800	3 00	20,400	2 50	17,000	2 50	17,000	5 00	34,000
00 00	1,500	4 00	4,800	6 00	7,200 00	4 00	4,800	4 00	4,800	3 25	3,900	2 25	2,700	2 50	3,000	2 50	3,000	7 00	8,400	4 00	4,800	2 00	2,400	3 00	3,600	1 50	1,800
00 00	390	0 40	520	0 50	650 00	1 50	1,950	1 00	1,300	0 35	455	0 40	520	0 40	520	0 40	520	0 38	494	1 00	1,300	0 40	520	2 00	2,600	0 50	650
00 20	2,000	0 35	2,500	0 45	4,500 00	0 55	5,500	1 20	12,000	0 37	3,700	0 28	2,800	0 20	3,000	0 32	3,200	0 50	5,000	0 30	3,000	0 30	3,000	0 30	3,000	0 40	4,000
00 18	18,000	0 30	30,000	0 40	40,000 00	0 45	45,000	0 40	40,000	0 35	35,000	0 25	25,000	0 28	28,000	0 25	25,000	0 36	36,000	0 30	30,000	0 26	26,000	0 20	20,000	0 30	30,000
00 10	3,000	0 15	4,500	0 20	6,000 00	0 30	9,000	0 20	6,000	0 10	3,000	0 09	2,700	0 10	3,000	0 10	3,000	0 06	1,800	0 20	6,000	0 18	540	0 20	6,000	0 16	4,800
00 00	360	20 00	400	20 00	400 00	25 00	500	50 00	1,000	20 00	400	25 00	500	25 00	500	20 00	400	16 00	320	18 00	360	20 00	400	25 00	500	20 00	400
00 00	200	20 00	200	25 00	250 00	30 00	300	70 00	700	23 00	230	25 00	250	25 00	250	25 00	250	20 00	200	20 00	200	40 00	400	40 00	400	25 00	250
00 00	150	20 00	100	30 00	150 00	50 00	250	80 00	400	25 00	125	40 00	200	40 00	200	30 00	150	25 00	125	25 00	125	50 00	250	40 00	200	30 00	150
00 00	1,600	0 10	2,000	0 10	2,000 00	0 20	4,000	0 20	4,000	0 12	2,500	0 12	2,500	0 12	2,400	0 15	3,000	0 12	2,400	0 12	2,400	0 15	3,000	0 10	2,000	0 15	3,000
00 04	120	0 07	210	0 08	240 00	0 20	600	0 15	450	0 10	300	0 10	300	0 09	270	0 10	300	0 07	210	0 08	240	0 12	360	0 10	2,000	0 09	2,700
00 00	411,150		406,194		666,845 60		670,610		598,530		441,990		397,520		427,654		547,590		581,453		499,230		473,110		515,030		525,490

McK. Sutherland.		John Elliott & Co.		Thos. Dumble.		Alex. Wallace.		A. Brown.		Chas. H. Lewis.		O. A. Rocque.		Hugh McCole.		Chas. De Graw.		F. J. Bowles.		Thos. Robinson.		Alex. Light.		R. S. Sutton.		A. Melville.		Richard Benner.	
Qty.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.
20 00	14,000 00	25 00	17,500	40 00	28,000	80 000																							

		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
		\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	
700	Acres clearing..... per acre.	30 00	21,000	16 00	11,200	60 00	42,000	20 00	14,000	25 00	17,500	20 00	14,000	45 00	31,500 00	30 00	21,000	20 00	14,000	20 00	14,000	17 50	12,250	22		
22	do close-cutting..... do	45 00	990	45 00	990	130 00	2,880	25 00	550	30 00	660	40 00	880	20 00	440 00	30 00	660	30 00	660	20 00	440	20 00	440	22		
114	do grubbing (including side-ditches)..... do	160 00	18,240	100 00	11,400	240 00	27,360	160 00	18,240	80 00	9,120	60 00	6,840	45 00	5,130 00	125 00	11,250	100 00	11,400	75 00	8,550	50 00	5,700	55		
20,000	Lineal feet fencing..... per 100 l. ft.	7 00	1,400	6 00	1,200	14 00	2,800	6 00	1,200	8 00	1,600	5 62	1,124	7 20	1,440 00	10 00	2,400	12 00	2,400	10 00	2,400	4 50	900	5		
30,000	Cubic yards solid rock excavation... per c. yd.	1 60	48,000	1 50	45,000	1 25	37,500	2 50	75,000	1 25	37,500	1 25	37,500	1 70	51,000 00	1 90	57,000	2 00	60,000	1 35	40,500	1 80	54,000	1		
8,000	do loose do..... do	1 00	8,000	0 75	6,000	0 60	4,800	0 75	6,000	0 40	3,200	0 50	4,000	1 10	8,800 00	1 00	8,000	1 00	8,000	0 60	4,800	0 80	6,400	0		
944,000	do earth excavation..... do	0 29 1/2	278,480	0 33	311,520	0 32	302,080	0 36	339,840	0 26	245,440	0 23	217,120	0 48	453,120 00	0 40	377,600	0 33	311,520	0 26	245,440	0 25	236,000	0		
74,000	Lineal feet under-drains..... per 100 l. ft.	15 00	11,100	12 00	8,880	20 00	14,800	12 00	8,880	36 00	28,640	50 00	37,000	9 44	6,985 60	20 00	14,800	40 00	29,600	12 50	9,250	14 00	10,360	15		
2 spans.	100 feet clear, Howe truss bridges..... per span.	40 00	8,000	2,000 00	4,000	4,500 00	9,000	5,000 00	10,000	2,700 00	5,400	3,000 00	6,000	3,200 00	6,400 00	6,000 00	12,000	5,000 00	10,000	4,000 00	8,000	2,150 00	4,300	2,500		
6 do	80 do do do..... do	35 00	16,800	1,600 00	9,600	3,500 00	21,000	3,960 00	23,760	1,920 00	11,520	2,400 00	14,400	2,400 00	6,400 00	6,000 00	12,000	4,000 00	8,000	3,750 00	22,500	1,750 00	10,500	2,000		
1 do	60 do do do..... do	30 00	1,800	1,200 00	1,200	2,500 00	2,500	2,700 00	2,700	1,320 00	1,320	1,860 00	1,860	1,680 00	5,000 00	5,000 00	3,000	3,000 00	3,000	3,500 00	3,500	1,400	1,400	0		
4 do	40 do do do..... do	25 00	4,000	1,000 00	4,000	1,500 00	6,000	1,800 00	7,200	800 00	3,200	1,000 00	4,000	1,010 00	4,160 00	4,000 00	16,000	1,500 00	6,000	3,250 00	13,000	1,050 00	4,200	1,100		
6,800	Cubic yards cribwork in abutments and piers of bridges (including timber and stone filling)..... per c. yd.	5 00	34,000	1 00	6,800	4 50	30,600	5 70	38,760	3 00	23,800	2 25	15,300	3 00	20,400 00	5 50	37,400	7 00	47,600	3 00	20,400	2 00	13,600	2		
1,200	Cubic yards rip-rap..... do	4 75	5,700	3 00	3,600	4 00	4,800	2 00	2,400	1 25	1,500	4 00	4,800	6 00	7,200 00	4 00	4,800	4 00	4,800	3 25	20,400	2 25	2,700	2		
1,300	Lineal feet piles..... per l. ft.	0 50	650	0 30	390	0 20	260	0 50	650	0 30	390	0 40	520	0 50	650 00	1 50	1,950	1 00	1,500	0 35	3,900	0 40	520	0		
10,000	do timber, 16 inches by 12 inches, stringers for trestle bridges and culverts..... do	0 35	3,500	0 20	2,000	0 64	6,400	0 55	5,500	0 20	2,000	0 35	3,500	0 45	4,500 00	0 55	5,500	1 20	12,000	0 37	3,700	0 28	2,800	0		
100,000	Lineal feet timber, 12 inches square, in trestle bridges, culverts and cattle guards..... do	0 25	25,000	0 16	16,000	0 48	48,000	0 45	45,000	0 18	18,000	0 30	30,000	0 40	40,000 00	0 45	45,000	0 40	40,000	0 35	35,000	0 25	25,000	0		
30,000	Lineal feet 8-inch flatted timber, in trestle bridges, culverts and cattle guards..... do	0 15	4,500	0 08	2,400	0 14	4,200	0 35	10,500	0 10	3,000	0 15	4,500	0 20	6,000 00	0 30	9,000	0 20	6,000	0 10	3,000	0 09	2,700	0		
20,000	Feet B.M., hemlock or spruce plank..... per 1,000 ft. B.M.	30 00	600	20 00	400	25 00	500	35 00	7,000	15 00	300	20 00	400	25 00	500 00	25 00	500	50 00	1,000	20 00	400	25 00	500	25 00	0	
10,000	Feet B.M., pine plank..... do	35 00	350	25 00	250	30 00	300	40 00	4,000	20 00	200	20 00	200	25 00	250 00	30 00	300	70 00	700	23 00	230	25 00	250	25 00	0	
5,000	do hardwood plank..... do	100 00	500	20 00	100	35 00	175	40 00	2,000	30 00	150	20 00	100	30 00	150 00	50 00	250	80 00	400	25 00	125	40 00	200	40 00	0	
20,000	Lbs. wrought iron, including bolts, spikes, straps, &c..... per lb.	0 08	1,600	0 08	1,600	0 05 1/2	1,100	0 12 1/2	2,400	0 08	1,600	0 10	2,000	0 10	2,000 00	0 20	4,000	0 20	4,000	0 12 1/2	2,500	0 12 1/2	2,500	0 10	0	
3,000	Lbs. cast iron..... do	0 06	180	0 05	150	0 04 1/2	135	0 06	180	0 04	120	0 07	210	0 08	240 00	0 20	400	0 15	450	0 10	300	0 10	300	0 00	0	
	Total amount.....		486,450		448,680		569,170		625,760		411,150		466,194		666,845 60		670,610		598,830		441,990		397,520			

Approximate Quantities	Description of Work.	E. A. Charters & Co.		Wm. Jennings.		John Wardrop.		A. McBeare & Co.		H. McK. Sutherland.		John Elliott & Co.		Thos. Dumble.		Alex. Wallace.		A. Brown.		Chas. H. Lewis.		O. A. Rocque.		Hug
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.			
		\$ cts.	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$ cts.	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	
700	Acres clearing..... per acre.	17 00	11,900	25 00	17,500 00	20 00	14,000	20 00	14,000	20 00	14,000 00	25 00	17,500	40 00	28,000	80 00	56,000	27 00	18,900	20 00	140,000	30 00	42,000	30 00
22	do close-cutting..... do	30 00	660	35 00	770 00	15 00	330	20 00	440	20 00	440 00	60 00	1,320	100 00	2,200	90 00	1,980	12 00	264	40 00	8,800	60 00	4,200	30 00
114	do grubbing (including side-ditches)..... do	25 00	2,850	250 00	28,500 00	140 00	15,960	200 00	22,800	50 00	5,750 00	150 00	17,100	200 00	22,000	110 00	12,100	140 00	15,960	200 00	22,800	200 00	22,800	60 00
20,000	Lineal feet fencing..... per 100 l. ft.	3 00	600	8 50	1,700 00	5 00	1,000	6 75	1,350	6 00	1,200 00	4 00	1,600	10 00	2,000	6 50	1,300	6 00	1,800	20 00	4,000	40 00	8,000	10 00
30,000	Cubic yards solid rock excavation... per c. yd.	1 00	30,000	1 50	45,000 00	1 15	34,500	1 65	49,500	1 90	57,000 00	2 00	60,000	3 50	105,000	2 25	67,500	2 00	60,000	2 00	60,000	2 25	67,500	10 00
8,000	do loose do..... do	0 80	4,800	4 20	9,600 00	0 40	3,200	0 70	7,200	0 80	7,200 00	1 05	9,300	1 30	12,600	1 25	10,000	1 00	8,000	0 75	6,000	1 25	10,000	1 50
944,000	do earth excavation..... do	0 23	217,120	0 27	254,580 00	0 26	245,440	0 32	302,080	0 26	245,440 00	0 40	377,600	0 30	284,200	0 45	424,800	0 39	368,160	0 25	236,000	0 50	472,000	0 20
74,000	Lineal feet under-drains..... per 100 l. ft.	11 00	8,140	30 00	22,200 00	15 00	11,100	20 00	14,800	15 00	11,100 00	30 00	2,200	15 00	11,100	20 00	14,800	16 00	11,800	4 00	2,960	40 00	29,600	20 00
2 spans.	100 feet clear, Howe truss bridges..... per span.	3,000 00	6,000	5,040 00	10,080 00	4,000 00	8,000	4,000 00	8,000	2,227 10	4,454 32	5,000 00	10,000	3,700 00	7,400	4,500 00	9,000	3,000 00	6,000	4,000 00	8,000	5,000 00	10,000	3,240 00
6 do	80 do do do..... do	2,400 00	14,400	3,580 00	21,480 00	2,800 00	16,800	2,400 00	14,400	1,835 97	11,135 82	4,600 00	21,600	2,800 00	16,800	3,200 00	19,200	2,000 00	12,000	3,000 00	4,000 00	18,000	4,000 00	2,436 00
1 do	60 do do do..... do	1,500 00	1,500	2,432 00	2,432 00	1,680 00	1,680	1,500 00	1,500	1,484 78	1,484 78	3,000 00	3,000	1,800 00	1,800	2,280 00	2,280	1,500 00	1,500	2,500 00	2,500	2,400 00	2,400	1,742 80
4 do	40 do do do..... do	1,000 00	4,000	1,410 00	5,640 00	920 00	3,680	600 00	2,400	1,113 58	4,454 32	2,000 00	8,000	1,000 00	4,000	1,440 00	5,760	1,060 00	4,000	1,800 00	7,200	1,600 00	6,400	1,104 00
6,800	Cubic yards cribwork in abutments and piers of bridges (including timber and stone filling)..... per c. yd.	2 00	13,600	5 00	34,000 00	3 00	20,400	1 25	8,500	2 00	13,600 00	6 00	40,800	4 00	27,200	4 50	30,600	4 50	30,600	2 00	13,600	5 00	34,000	7 00
1,200	Cubic yards rip-rap..... do	1 50	1,800	5 50	6,600 00	2 00	2,400	2 00	2,400	2 50	3,000 00	4 00	4,800	4 00	4,800	2 75	3,300	2 00	2,400	1 00	1,200	3 50	4,200	3 00
1,300	Lineal feet piles..... per l. ft.	0 20	260	0 35	455 00	0 40	520	0 40	520	0 40	520 00	0 50	650	0 50	650	0 55	715	0 50	650	0 40	520	2 00	2,600	0 50
10,000	do timber, 16 inches by 12 inches, stringers for trestle bridges and culverts..... do	0 40	4,000	0 40	4,000 00	0 35	3,500	0 45	4,500	0 28	2,800 00	0 50	5,000	0 40	4,000	0 64	6,400	0 45	4,500	0 30	3,000	0 68	6,800	0 50
100,000	Lineal feet timber, 12 inches square, in trestle bridges, culverts and cattle guards..... do	0 25	25,000	0 30	30,000 00	0 20	20,000	0 38	38,000	0 24	24,000 00	0 45	45,000	0 35	35,000	0 42	42,000	0 35	35,000	0 25	25,000	0 50	50,000	0 40
30,000	Lineal feet 8-inch flatted timber, in trestle bridges, culverts and cattle guards..... do	0 15	4,500	0 05	1,500 00	0 15	4,500	0 30	9,000	0 10	3,000 00	0 21	6,300	0 15	4,500	0 10	3,000	0 12	3,600	0 10	3,000	0 30	9,000	0 25
20,000	Feet B.M., hemlock or spruce plank..... per 1,000 ft. B.M.	12 00	240	20 00	400 00	20 00	400	25 00	500	25 00	500 00	25 00	500	35 00	700	23 00	460	30 00	600	25 00	500	40 00	800	36 00
10,000	Feet B.M., pine plank..... do	18 00	180	25 00	250 00	25 00	250	30 00	300	25 00	250 00	30 00	300	35 00	350	26 00	260	40 00	400	30 00	300	50 00	500	36 00
5,000	do hardwood plank..... do	18 00	90	30 00	150 00	25 00	125	30 00	150	40 00	200 00	50 00	250	60 00	300	28 00	140	65 00	320	60 00	200	100 00	500	36 00
20,000	Lbs. wrought iron, including bolts, spikes, straps, &c..... per lb.	0 08	1,600	0 12	2,400 00	0 10	2,000	0 12	2,500	0 12	2,600 00	0 12	2,400	0 13	3,000	0 12	2,400	0 15	3,000	0 12	2,400	0 22	4,400	0 08
3,000	Lbs. cast iron..... do	0 06	180	0 08	240 00	0 08	240	0 10	300	0 10	300 00	0 08	240	0 08	240	0 10	300	0 12	360	0 09	270	0 11	330	0 06
	Total amount.....		363,120		499,777 50		410,025		505,140		414,379 24		636,560		576,649		714,735		589,259		566,350		809,150	

CONTRACT No. 25.

CANADIAN PACIFIC RAILWAY—Sunshine Creek to English River—Tender for Works—Schedule of Quantities and Prices.

Approximate Quantities	Description of Works.	Sifton & Farewell.		P. J. Brown.		Richard Nagle.		J. O'Brien & Co.		Brown & Ryan.		John Carrell.		Jos. Whitehead.		Purcell & Ryan.		Hunter & Murray.		J. A. Henry & Co.		Wardrop, Booth & Ross.		A. P. Macdonald & Co.		Executed Quantities
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
		\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	
100	Acres clearing..... per acre.	20 00	2,000	35 00	3,500	30 00	3,000	30 00	3,000	20 00	2,000	20 00	2,000	22 00	2,200	25 00	2,500	30 00	3,000	30 00	3,000	40 00	4,000	50 00	5,000	381-1
50	do close cutting..... do	40 00	2,000	40 00	2,000	20 00	1,000	20 00	1,000	10 00	500	40 00	2,000	25 00	1,250	30 00	1,500	25 00	1,250	45 00	2,250	40 00	2,000	-60 00	3,000	123-9
200	do grubbing (including side ditches and off-take drains) do	60 00	12,000	150 00	30,000	70 00	14,000	75 00	15,000	100 00	20,000	150 00	30,000	160 00	32,000	80 00	16,000	75 00	15,000	100 00	20,000	140 00	28,000	100 00	20,000	266-6
240,000	Cubic yards solid rock excavation (line cuttings)..... per c. yd.	1 95	468,000	1 96	470,400	1 95	468,000	1 75	420,000	2 10	504,000	2 75	660,000	3 00	720,000	1 50	360,000	2 00	480,000	1 90	456,000	1 80	432,000	2 70	648,000	76,800
10,000	Cubic yards loose rock excavation (line cuttings)..... do	1 00	10,000	1 00	10,000	0 80	8,000	0 75	7,500	0 75	7,500	1 75	17,500	1 75	17,500	0 90	9,000	0 90	9,000	1 00	10,000	0 80	8,000	2 40	24,000	110,000
1,000,000	Cubic yards earth excavation (including borrowing)..... do	0 29	290,000	0 38	380,000	0 32	320,000	0 38	380,000	0 40	400,000	0 35	350,000	0 36	360,000	0 33	330,000	0 30	300,000	0 33	330,000	0 40	400,000	0 46	460,000	1,970,000
10,000	Cubic yards excavation in off-take ditches beyond railway limits..... do	0 32	3,200	0 40	4,000	0 32	3,200	0 40	4,000	0 35	3,500	0 35	3,500	0 40	4,000	0 35	3,500	0 40	4,000	0 35	3,500	0 30	3,000	0 35	3,500	2,800
60,000	Lineal feet under drains..... per 100 lin. ft.	60 00	36,000	60 00	36,000	50 00	30,000	30 00	18,000	10 00	6,000	25 00	15,000	20 00	12,000	10 00	6,000	40 00	24,000	55 00	33,000	30 00	18,000	50 00	30,000	2,800
4 spans	100 feet clear, Howe truss-bridge..... per span.	4,000 00	16,000	4,600 00	18,400	4,000 00	16,000	4,000 00	16,000	3,750 00	15,000	5,000 00	20,000	4,480 00	17,920	4,000 00	16,000	3,500 00	14,000	4,500 00	18,000	4,000 00	16,000	6,000 00	24,000	8,800
2 do	80 do do do do do do	3,200 00	6,400	4,000 00	8,000	2,400 00	4,800	2,880 00	5,760	2,650 00	5,300	3,600 00	7,200	3,680 00	7,360	2,800 00	5,600	2,800 00	5,600	3,200 00	6,400	3,200 00	6,400	4,400 00	8,800	8,800
6 do	60 do do do do do do	2,500 00	15,000	3,600 00	21,600	1,800 00	10,800	1,920 00	11,520	1,650 00	9,900	2,400 00	14,400	2,448 00	14,688	2,100 00	10,800	2,100 00	10,800	2,100 00	12,600	2,100 00	12,600	3,000 00	18,000	18,000
6 do	40 do do do do do do	1,500 00	9,000	2,800 00	16,800	1,000 00	6,000	1,120 00	6,720	1,000 00	6,000	1,200 00	7,200	1,728 00	10,368	1,200 00	7,200	1,200 00	7,200	1,200 00	7,200	1,200 00	7,200	1,800 00	10,800	10,800
9,000	Cubic yards crib-work in abutments and piers of bridges (including timber and stone filling)..... per c. yd.	5 00	45,000	5 00	45,000	5 00	45,000	5 00	45,000	3 50	31,500	4 00	36,000	5 00	45,000	4 00	36,000	3 50	31,500	4 00	36,000	3 00	27,000	4 50	40,500	2,400
2,000	Cubic yards rip-rap..... do	4 00	8,000	4 00	8,000	2 00	4,000	2 00	4,000	2 00	4,000	4 00	8,000	3 00	6,000	0 50	2,500	2 00	4,000	4 00	8,000	0 55	2,915	0 50	2,500	59,800
5,300	Lineal feet piles driven..... per lin. ft.	0 60	3,180	0 75	3,975	0 30	1,590	0 40	2,120	0 40	2,120	0 50	2,650	0 60	3,180	0 25	1,325	0 40	2,120	0 80	4,240	0 55	2,915	0 50	2,500	59,800
14,000	Lineal feet timber, 16 inches by 12 inches, stringers in trestle-bridges and culverts..... do	0 50	7,000	0 60	8,400	0 38	5,320	0 50	7,000	0 45	6,300	0 60	8,400	0 55	7,700	0 50	7,000	0 50	7,000	0 67	9,380	0 60	8,400	0 50	7,000	18,700
96,000	Lineal feet timber, 12 inches square, in trestle-bridges, culverts and cattle-guards..... do	0 45	43,200	0 60	57,600	0 30	28,800	0 40	38,400	0 32	30,720	0 45	43,200	0 45	43,200	0 40	38,400	0 35	33,600	0 40	38,400	0 50	48,000	0 40	38,400	91,400
4,000	Lineal feet timber, 12 inches by 6 inches, in work..... do	0 35	1,400	0 50	2,000	0 22	880	0 25	1,000	0 25	1,000	0 23	920	0 25	1,000	0 20	800	0 20	800	0 40	1,600	0 39	1,200	0 35	1,400	3,900
45,000	Lineal feet timber, 9 inches by 8 inches, in work..... do	0 25	11,250	0 45	20,250	0 22	9,900	0 25	11,250	0 17	7,650	0 20	9,000	0 35	15,750	0 20	9,000	0 20	9,000	0 40	18,000	0 30	13,500	0 38	17,100	77,600
28,000	Lineal feet timber, 9 inches by 6 inches, in work..... do	0 25	7,000	0 40	11,200	0 20	5,600	0 22	6,160	0 16	4,480	0 18	5,040	0 35	9,800	0 18	5,040	0 18	5,040	0 40	11,200	0 25	7,000	0 38	10,640	29,800
1,000	Ft. B. M. hemlock or spruce plank, in work..... per 1,000 B.M.	30 00	330	50 00	5,500	25 00	275	20 00	220	30 00	330	40 00	440	32 00	352	16 00	176	25 00	275	30 00	330	80 00	880	40 00	440	41,000
32,000	Ft. B. M. pine plank, in work..... do	30 00	960	50 00	16,000	30 00	960	25 00	800	35 00	1,120	45 00	1,440	40 00	1,280	20 00	640	30 00	960	30 00	960	80 00	2,560	50 00	1,600	41,000
4,000	do hardwood plank, in work..... do	70 00	280	75 00	3,000	40 00	160	40 00	160	75 00	300	100 00	400	32 00	128	20 00	80	45 00	180	100 00	400	80 00	320	70 00	280	280
49,000	Lbs. wrought iron, including bolts, spikes, straps, &c., in work..... per lb.	0 20	9,800	0 25	12,250	0 10	4,900	0 10	4,900	0 10	4,900	0 16	7,840	0 12	5,880	0 10	4,900	0 10	4,900	0 15	8,820	0 20	9,800	0 15	7,350	71,000
10,000	Lbs. cast iron..... do	0 12	1,200	0 18	1,800	0 10	1,000	0 08	800	0 10	1,000	0 14	1,400	0 07	700	0 10	1,000	0 10	1,000	0 15	1,500	0 15	1,500	0 12	1,200	37,000
210,000	Ties..... per tie.	0 40	84,000	0 45	94,500	0 35	73,500	0 40	84,000	0 35	73,500	0 27	56,700	0 30	63,000	0 26	54,600	0 30	63,000	0 37	77,700	0 40	84,000	0 40	84,000	241,000
112	Miles track-laying..... per mile.	550 00	61,600	700 00	79,400	240 00	26,880	400 00	44,800	300 00	33,600	250 00	28,000	400 00	44,800	300 00	33,600	400 00	44,800	750 00	81,000	450 00	50,400	450 00	50,400	198,000
180,000	Cubic yards ballasting..... per c. yd.	0 50	90,000	0 40	72,000	0 30	54,000	0 60	180,000	0 37	66,600	0 50	90,000	0 40	72,000	0 38	68,400	0 60	108,000	0 35	63,000	0 45	81,000	0 60	108,000	198,000
24	Points and crossings..... laying each.	75 00	1,800	0 50	1,200	40 00	960	30 00	720	30 00	720	40 00	960	30 00	720	50 00	1,200	25 00	600	50 00	1,200	0 20	480	150 00	3,600	3,600
Total amount.....		1,245,600		1,452,775		1,148,625		1,247,830		1,249,540		1,429,190		1,519,776		1,037,061		1,190,215		1,259,930		1,309,155		1,635,660		

Line tunnels—15 cubic yards to lineal foot.....
 Widening banks.....
 Flatted timber, 8-inch.....
 Sheet piling.....
 Iron and timber, as per McLennan's Statement.....

Work executed.....
 Work to be done.....

Total.....

Certified a true copy.
 (Signed) F. BRAUN,
 Secretary.

Date of receipt of Tenders, 22nd May, 1876.

er for Works—Schedule of Quantities and Prices.

Purcell & Ryan.		Hunter & Murray.		J. A. Henry & Co.		Wardrop, Booth & Ross.		A. P. Macdonald & Co.		Added from Return before Committee.					
Rate.		Rate.		Rate.		Rate.		Rate.		Executed up to 30th November, 1878.			Estimate of work to be done.		
Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.
\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$		\$ cts.	\$ cts.		\$ cts.	\$ cts.
25 00	2,500	30 00	3,000	30 00	3,000	40 00	4,000	50 00	5,000	381.15	25 00	9,528 75			
30 00	1,500	25 00	1,250	45 00	2,250	40 00	2,000	60 00	3,000	123.99	30 00	3,719 70			
80 00	16,000	75 00	15,000	100 00	20,000	140 00	28,000	100 00	20,000	266.62	80 00	21,329 60			
1 50	360,000	2 00	480,000	1 90	456,000	1 80	432,000	2 70	648,000	76,800	1 50	115,200 00			
0 90	9,000	0 90	9,000	1 00	10,000	0 80	8,000	2 40	24,000	110,000	0 90	99,000 00			
0 33	330,000	0 30	300,000	0 33	330,000	0 40	400,000	0 46	460,000	1,970,000	0 33	650,100 00			
0 35	3,500	0 40	4,000	0 35	3,500	0 30	3,000	0 35	3,500						
10 00	6,000	40 00	24,000	55 00	33,000	30 00	18,000	50 00	30,000	2,800	10 00	280 00			
00 00	16,000	3,500 00	14,000	4,500 00	18,000	4,000 00	16,000	6,000 00	24,000						
00 00	5,600	2,800 00	5,600	3,200 00	6,400	3,200 00	6,400	4,400 00	8,800	2	2,800 00	5,600 00			
00 00	12,600	1,800 00	10,800	2,100 00	12,600	2,100 00	12,600	3,000 00	18,000	1	2,100 00	2,100 00			
00 00	7,200	1,200 00	7,200	1,200 00	7,200	1,200 00	7,200	1,800 00	10,800						
4 00	36,000	3 50	31,500	3 25	29,250	6 00	54,000	4 50	40,500	2,950	4 00	11,800 00			
2 50	5,000	2 00	4,000	4 00	8,000	3 00	6,000	3 00	6,000	7,960	2 50	19,900 00			
0 25	1,325	0 40	2,120	0 80	4,240	0 55	2,915	0 50	2,650	59,800	0 25	14,950 00			
0 50	7,000	0 50	7,000	0 67	9,380	0 60	8,400	0 50	7,000	18,700	0 50	9,350 00			
0 40	38,400	0 35	33,600	0 40	38,400	0 50	48,000	0 40	38,400	91,400	0 40	36,560 00			
0 20	800	0 20	800	0 40	1,600	0 30	1,200	0 35	1,400	3,900	0 20	780 00			
0 20	9,000	0 20	9,000	0 40	18,000	0 30	13,500	0 38	17,100	77,600	0 20	15,520 00			
0 18	5,040	0 18	5,040	0 40	11,200	0 25	7,000	0 38	10,640	29,800	0 18	5,364 00			
16 00	176	25 00	275	30 00	330	80 00	880	40 00	440						
20 00	610	30 00	960	30 00	960	80 00	2,560	50 00	1,600	41,400	20 00	828 00			
20 00	80	45 00	180	100 00	400	80 00	320	70 00	280						
0 10	4,900	0 10	4,900	0 18	8,820	0 20	9,800	0 15	7,350	71,600	0 10	7,160 00			
0 10	1,000	0 10	1,000	0 15	1,500	0 15	1,500	0 12	1,200	37,400	0 10	3,740 00			
0 26	54,600	0 30	63,000	0 37	77,700	0 40	81,000	0 40	81,000	241,000	0 26	62,660 00	2,000	0 26	520 00
00 00	33,600	400 00	44,800	750 00	81,000	450 00	50,400	450 00	50,400	102	300 00	30,600 00	13.87	300 00	4,161 00
0 38	68,400	0 60	108,000	0 35	63,000	0 45	81,000	0 60	108,000	198,898	0 38	75,581 24	100,227	0 38	38,086 26
50 00	1,200	25 00	600	50 00	1,200	0 20	480	150 00	3,600	15	50 00	750 00	11	50 00	550 00
.....	1,037,061	.....	1,190,125	.....	1,259,930	.....	1,309,155	.....	1,635,660						
Line tunnels—15 cubic yards to lineal foot.....										7,870	9 00	78,830 00			
Widening banks.....										83,102	0 38	31,578 76	80,600	0 38	30,628 00
Flatted timber, 8-inch.....										25,300	0 20	5,060 00			
Sheet piling.....										11,200	0 30	336 00			
Iron and timber, as per McLennan's Statement.....															494 32
Work executed.....												1,310,206 06			74,439 58
Work to be done.....												74,439 58			
Total.....												1,384,645 63			

282

F. BRAUN,
Secretary.

CONTRACT No. 14.

CANADIAN PACIFIC RAILWAY.—Red River to Cross Lake.—Tender for Works.—Schedule of Quantities and Prices.

Schedule of Quantities and Prices.																																		
Approximate Quantities	Description of Works.	Jos. Whitehead.		Steady & Steady.		Row, Wilson & Row.		McNamee & Co.		A. Carmichael.		Sifton & Ward.		Bowie & Gough.		Wm. T. Jennings.		Purcell, Lynch & Co.		Wallace, Campbell & Co.		F. J. Bowles & Co.		Wardrop & Ross.		Rocque and O'Hanly.		Chas. H. Lewis.		C. F. Manson & Co.		M. Murphy & Co.		H. F.
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	Rate.	Am't.	
1,000	Acres clearing.....per acre	20 00	20,000	35 00	35,000	22 00	22,000	50 00	50,000	25 00	25,000	5 00	5,000	25 00	25,000	27 00	27,000	25 00	25,000	40 00	40,000	40 00	40,000	30 00	30,000	50 00	50,000	100 00	100,000	90 00	90,000	20 00	20,000	20 00
100	do close cutting..... do	25 00	2,500	40 00	4,000	40 00	4,000	60 00	6,000	20 00	2,000	40 00	4,000	40 00	4,000	30 00	3,000	20 00	2,000	50 00	5,000	50 00	5,000	20 00	2,000	60 00	6,000	150 00	15,000	200 00	20,000	20 00	2,000	25 00
200	do grubbing (including side ditches)..... do	160 00	32,000	125 00	25,000	160 00	32,000	90 00	18,000	200 00	40,000	60 00	12,000	150 00	30,000	200 00	40,000	135 00	25,000	80 00	16,000	180 00	20,000	160 00	32,000	200 00	40,000	90 00	18,000	80 00	16,000	160 00	32,000	60 00
200,000	Lineal ft. fencing.....per 100 l. ft.	6 00	12,000	9 00	18,000	9 00	18,000	10 00	20,000	9 00	18,000	6 00	12,000	2 50	5,000	10 00	20,000	8 00	16,000	5 00	10,000	9 00	18,000	7 00	14,000	20 00	40,000	5 00	10,000	4 50	9,000	160 00	32,000	60 00
10,000	Cubic yards solid rock excavation.....per c. yd.	2 50	25,000	2 00	20,000	1 50	15,000	2 50	25,000	3 00	30,000	2 00	20,000	2 00	20,000	2 25	22,500	2 75	27,500	1 10	11,000	1 75	17,500	3 00	30,000	1 50	15,000	1 25	12,500	1 10	11,000	2 00	20,000	2 25
3,000	do loose rock excavation..... do	0 80	2,400	0 60	1,800	0 80	2,400	1 00	3,000	1 50	4,500	1 00	3,000	1 00	3,000	1 50	4,500	1 00	3,000	0 75	2,250	1 00	3,000	0 75	2,250	0 50	1,500	0 80	2,400	0 90	2,700	1 00	3,000	1 00
1,000,000	do earth excavation (including borrowing)..... do	0 31	310,000	0 32	320,000	0 31	310,000	0 36	360,000	0 25	250,000	0 26	260,000	0 25	250,000	0 27	270,000	0 36	360,000	0 23	230,000	0 35	350,000	0 40	400,000	0 27	275,000	0 25	250,000	0 24	240,000	0 32	320,000	0 27
40,000	do Excavation in off-take ditches beyond Rail-way limits..... do	0 40	16,000	0 30	12,000	0 25	10,000	0 30	12,000	0 40	16,000	0 23	9,200	0 25	10,000	0 32	12,800	0 35	14,000	0 30	12,000	0 30	12,000	0 30	12,000	0 30	12,000	0 30	12,000	0 35	14,000	0 50	20,000	0 27
20,000	Lin. ft. under-drains.....per 100 l. ft.	12 00	2,400	50 00	10,000	40 00	8,000	25 00	5,000	12 00	2,400	50 00	10,000	20 00	4,000	26 00	5,200	20 00	4,000	10 00	2,000	25 00	5,000	20 00	4,000	25 00	5,000	25 00	5,000	20 00	4,000	0 50	20,000	0 27
3 spans	100 ft. clear, Howe truss bridges.....per span	5,000 00	15,000	4,000 00	12,000	32 00	9,900	6,000 00	18,000	3,500 00	10,500	4,000 00	12,000	3,000 00	9,000	5,040 00	15,120	5,000 00	15,000	3,000 00	9,000	4,500 00	13,500	6,000 00	15,000	4,500 00	13,500	5,000 00	15,000	4,400 00	13,200	4,000 00	12,000	4,000 00
1 do	80 do do do do	3,520 00	3,520	2,800 00	2,800	25 00	2,000	4,000 00	4,000	2,500 00	2,500	3,000 00	3,000	3,000 00	9,000	3,738 00	3,738	3,600 00	3,600	3,000 00	2,240 00	2,240	3,360 00	4,000 00	4,000	3,200 00	3,200	4,500 00	4,500	3,800 00	3,800	3,200 00	3,200	4,000 00
do	60 do do do do	2,700 00	2,700	1,800 00	1,800	22 00	1,320	3,000 00	3,000	1,500 00	1,500	2,500 00	2,500	3,000 00	3,000	2,277 00	2,277	2,700 00	2,700	2,240 00	2,240	3,360 00	4,000 00	4,000	3,200 00	3,200	4,500 00	4,500	3,800 00	3,800	3,200 00	3,200	4,000 00	
2,500	Cubic yds. crib-work in abutments and piers of bridges (including timber and stone filling).....per c. yd.	5 50	13,750	4 00	10,000	3 50	8,750	3 50	8,750	5 00	12,500	3 00	7,500	1 00	2,500	5 25	13,125	5 00	12,500	3 00	7,500	8 00	20,000	5 00	12,000	2 50	6,250	2 50	6,250	2 25	5,625	2 50	5,250	2 50
1,200	Cubic yds. rip-rap..... do	2 00	2,400	1 60	1,920	1 50	1,800	3 00	3,600	2 00	2,400	4 00	4,800	5 00	6,000	3 00	3,600	4 00	4,800	2 00	2,400	4 00	4,800	5 00	12,000	2 50	6,250	2 50	6,250	2 25	5,625	2 50	5,250	2 50
2,400	Lineal ft. piles.....per l. ft.	0 50	1,200	0 40	960	0 40	960	0 40	960	0 40	960	0 50	1,200	1 50	3,600	0 65	1,560	1 50	3,600	0 50	1,200	0 60	1,440	0 70	1,680	0 50	1,200	0 50	1,200	0 40	960	1 00	2,400	0 65
6,000	Lineal ft. timber, 16 in. by 12 in., stringers for trestle-bridges and culverts..... do	0 75	4,500	0 32	1,920	0 36	2,160	0 40	2,400	0 35	2,100	0 60	3,600	0 50	3,000	0 55	3,300	0 45	2,700	0 50	3,000	0 80	4,800	0 60	3,600	0 60	3,600	0 40	2,400	0 40	2,400	0 50	3,000	0 40
55,000	Lineal ft. timber, 12 in. square, in trestle-bridges, culverts and cattle-guards..... do	0 50	27,500	0 29	15,950	0 28	15,400	0 35	19,250	0 30	16,500	0 40	22,000	0 40	22,000	0 45	24,750	0 40	22,000	0 30	16,500	0 54	29,700	0 50	27,500	0 50	27,500	0 40	22,000	0 35	20,250	0 40	22,000	0 35
1,000	Lineal ft. timber, 12 in. by 6 in..... do	0 30	300	0 25	250	0 17	170	0 30	300	0 20	200	0 25	250	0 30	300	0 18	180	0 25	250	0 25	250	0 54	510	0 30	300	0 30	300	0 30	300	0 35	350	0 30	300	0 25
2,000	Lineal ft. timber, 9 in. by 6 in..... do	0 20	600	0 24	480	0 15	300	0 30	600	0 15	300	0 25	500	0 30	600	0 16	320	0 20	400	0 20	400	0 45	900	0 40	800	0 25	500	0 30	300	0 30	300	0 20	400	0 25
24,000	Lineal ft. 8 in. flatted timber..... do	0 30	7,200	0 15	3,600	0 14	3,360	0 25	6,000	0 10	2,400	0 20	4,800	0 40	9,600	0 05	1,320	0 15	3,600	0 08	1,920	0 15	3,600	0 20	4,800	0 25	6,000	0 20	4,800	0 25	6,000	0 30	7,200	0 12
10,000	Feet, B. M. hemlock or spruce plank..... per 1,000 ft. B.M.	35 00	3,500	30 00	3,000	25 00	2,500	40 00	4,000	20 00	2,000	50 00	5,000	30 00	3,000	30 00	300	30 00	300	18 00	180	40 00	400	30 00	300	30 00	300	40 00	400	45 00	450	25 00	250	35 00
8,000	do pine plank..... do	40 00	3,200	33 00	2,640	35 00	280	60 00	480	25 00	200	50 00	500	40 00	400	33 00	264	30 00	240	20 00	160	40 00	400	30 00	300	40 00	400	50 00	400	50 00	400	40 00	320	40 00
5,000	do hardwood plank..... do	40 00	2,000	45 00	225	35 00	175	60 00	300	30 00	150	50 00	250	40 00	200	35 00	175	50 00	250	22 00	110	50 00	250	40 00	200	60 00	300	60 00	300	65 00	325	40 00	200	55 00
20,000	Lbs. wrought iron, including bolts, spikes, straps, &c.....per lb.	0 12	2,400	0 12	2,400	0 14	2,800	0 16	3,200	0 16	3,200	0 20	4,000	0 25	5,000	0 16	3,200	0 15	3,000	0 12	2,400	0 12	2,400	0 15	3,000	0 25	5,000	0 18	3,600	0 20	4,000	0 15	3,000	0 17
3,000	Lbs. cast iron..... do	0 06	180	0 07	210	0 08	240	0 14	420	0 11	320	0 15	450	0 20	600	0 12	390	0 15	450	0 10	300	0 12	360	0 12	432	0 15	540	0 18	648	0 19	777	0 19	810	0 19
Total.....		512,270		500,879		471,265		570,660		443,840		402,950		420,020		478,619		551,890		377,250		559,210		609,770		516,445		492,400		470,125		493,220		

CONTRACT No. 15.—1st SET.

• CANADIAN PACIFIC RAILWAY.—Cross Lake to Lake of the Woods.—Tender for Works.—Schedule of Quantities and Prices.

Approximate Quantities	Description of Work.	Jos. Whitehead.		Stacey & Steacy.		Row, Wilson & Row.		McNamee & Frechette.		Sifton & Ward.		Bowie & Gough.		Wallace & Campbell.		Bowles & Cotton.		Wardrop & Ross.		Rocque & O'Hanly.		C. Lewis.		Munson & Co.		Brown, Ryan, Purcell & Co.		
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
500	Acres clearing	per acre.	\$ 20 00	10,000	\$ 35 00	17,500	\$ 22 00	11,000	\$ 50 00	25,000	\$ 10 00	5,000	\$ 30 00	15,000	\$ 40 00	20,000	\$ 50 00	25,000	\$ 40 00	20,000	\$ 55 00	27,500	\$ 75 00	37,500 00	\$ 85 00	42,500	\$ 30 00	15,000
20	do close cutting	do	25 00	500	40 00	800	40 00	800	40 00	800	50 00	1,000	50 00	1,000	50 00	1,000	60 00	1,200	30 00	600	60 00	1,200	150 00	3,000 00	140 00	2,800	20 00	400
50	do grubbing (including side-ditches)	do	160 00	8,000	125 00	6,250	160 00	8,000	90 00	4,500	70 00	3,500	150 00	7,500	80 00	4,000	120 00	6,000	160 00	8,000	200 00	10,000	100 00	5,000 00	80 00	4,000	160 00	8,000
600,000	Cubic yards solid rock excavation	per c. yd.	3 25	1,950,000	2 00	1,700,000	2 50	1,500,000	2 50	1,500,000	2 50	1,500,000	2 50	1,500,000	1 20	720,000	2 50	1,500,000	4 00	2,400,000	2 00	1,200,000	1 04	624,000 00	1 08	648,000	3 75	2,250,000
40,000	do loose rock excavation (including borrowing)	do	0 90	36,000	0 65	26,000	1 25	50,000	1 00	40,000	1 00	40,000	1 00	40,000	0 60	24,000	1 50	60,000	1 00	40,000	1 00	40,000	0 75	30,000 00	0 80	32,000	2 00	80,000
900,000	do earth excavation (including borrowing)	do	0 36	324,000	0 33	297,000	0 40	360,000	0 36	324,000	0 32	288,000	0 30	270,000	0 26	231,000	0 40	360,000	0 50	450,000	0 45	405,000	0 23	207,000 00	0 24	216,000	0 50	450,000
20,000	do excavation in off take ditches beyond railway limits	do	0 40	8,000	0 30	6,000	0 30	6,000	0 30	6,000	0 30	6,000	0 25	5,000	0 35	7,000	0 30	6,000	0 30	6,000	0 50	10,000	0 23	4,600 00	0 25	5,000	0 60	12,000
15,000	Lineal feet under-drains	per 100 ft.	12 00	1,800	50 00	7,500	40 00	6,000	25 00	3,750	50 00	7,500	0 25	3,750	10 00	1,500	50 00	4,500	20 00	3,000	40 00	6,000	20 00	3,000	22 00	3,200	20 00	3,000
1 span	40 ft. clear, Howe-truss bridge	per span.	920 00	1,920	1,200 00	1,200	25 00	1,000	1,800 00	1,800	2,000 00	2,000	3,000	2,000 00	2,000	1,600 00	1,600	800 00	800	2,000 00	2,000	1,500 00	1,500 00	2,000 00	2,000	40 00	1,600	
380	Cubic yards crib-work in abutments & piers of bridges (including timber and stone filling)	per c. yd.	5 50	2,090	4 00	1,520	3 50	1,330	3 50	1,330	4 00	1,520	1 00	330	4 50	1,710	8 00	3,040	5 00	1,900	2 50	950	2 00	760 00	2 25	835	6 00	2,280
550	Lineal feet, tunnelling for railway (sectional area, equal to 15 cubic yards to the lineal foot)	per l. foot	300 00	165,000	90 00	49,500	60 00	33,000	90 00	49,500	55 00	30,250	25 00	13,750	90 00	49,500	40 00	22,000	100 00	55,000	120 00	66,000	63 75	35,062 50	60 00	33,000	180 00	99,000
200	do 20 feet tunnels, for streams (12 cubic yards per lineal foot)	do	240 00	48,000	84 00	16,800	60 00	12,000	72 00	14,400	45 00	9,000	25 00	5,000	36 00	7,200	30 00	6,000	75 00	15,000	100 00	20,000	51 00	10,200 00	48 00	9,600	156 00	31,200
160	do 16 feet tunnels, for streams (8 cubic yards per lineal foot)	do	160 00	25,600	60 00	9,600	50 00	8,320	56 00	8,960	35 00	5,600	25 00	4,000	32 00	5,120	20 00	3,200	60 00	9,600	70 00	11,200	34 00	5,440 00	32 00	5,120	120 00	19,200
320	do 12 feet tunnels, for streams (4 cubic yards per lineal foot)	do	80 00	25,600	32 00	10,240	32 00	10,240	32 00	10,240	20 00	6,400	25 00	8,000	20 00	6,400	10 00	3,200	40 00	12,800	40 00	12,800	20 00	6,400 00	25 00	8,000	72 00	23,040
450	do 8 feet tunnels, for streams (2 cubic yards per lineal foot)	do	50 00	22,500	20 00	9,000	16 00	7,200	18 00	8,100	15 00	6,750	25 00	7,250	10 00	4,500	5 00	2,250	25 00	11,250	25 00	11,250	12 00	5,400 00	12 00	5,400	50 00	22,500
1,300	do 6 feet tunnels, for streams (1 cubic yard per lineal foot)	do	30 00	39,000	12 00	15,600	12 00	15,600	14 00	18,200	10 00	13,000	25 00	32,500	2 00	7,800	4 00	5,200	20 00	26,000	13 00	16,900	6 00	7,800 00	7 50	9,750	30 00	39,000
1,000	Cubic yards rip-rap	per c. yd.	2 00	2,000	1 60	1,600	1 50	1,500	3 50	3,500	4 00	4,000	5 00	5,000	2 00	2,000	2 50	2,500	3 00	3,000	1 00	1,000	1 25	1,250	1 25	1,250	3 00	3,000
3,000	Lineal feet timber, 16 inches by 12 inches, stringers for trestle bridges and culverts	per l. foot	0 75	2,250	0 35	1,050	0 36	1,080	0 40	1,200	0 80	2,400	0 50	1,500	0 50	1,500	1 00	3,000	0 60	1,800	0 60	1,800	0 20	600 00	0 30	900	0 60	1,800
2,000	Lineal feet timber, 12 inches square, in trestle-bridges, culverts and cattle-guards	do	0 50	1,000	0 33	7,260	0 28	6,160	0 35	7,700	0 50	11,000	0 40	8,800	0 30	6,600	0 80	17,600	0 50	11,000	0 50	11,000	0 20	4,400 00	0 30	6,600	0 50	11,000
1,000	Lineal feet timber, 12 inches by 6 inches	do	0 30	300	0 25	250	0 17	170	0 25	250	0 20	200	0 30	300	0 25	250	0 60	600	0 30	300	0 30	300	0 20	200 00	0 25	250	0 30	300
6,000	Lineal feet timber, 9 inches by 6 inches	do	0 30	1,800	0 24	1,440	0 15	900	0 25	1,500	0 20	1,200	0 30	1,800	0 20	1,200	0 50	3,000	0 40	2,400	0 25	1,500	0 20	1,200 00	0 20	1,200	0 30	1,200
8,000	Lineal feet 8-inch flatted timber	do	0 30	2,400	0 15	1,200	0 14	1,120	0 20	1,600	0 20	1,600	0 40	3,200	0 08	640	0 40	3,200	0 20	1,600	0 25	2,000	0 20	1,600 00	0 20	1,600	0 20	1,600
15,000	Feet B.M. hemlock or spruce plank per 1,000 B.M.	do	40 00	6,000	30 00	450	25 00	375	40 00	600	50 00	750	30 00	450	18 00	270	50 00	7,500	40 00	600	40 00	600	40 00	600	50 00	750	50 00	750
10,000	do pine plank	do	40 00	4,000	35 00	350	35 00	350	60 00	600	65 00	650	40 00	400	20 00	200	60 00	600	40 00	400	50 00	500	40 00	400 00	50 00	500	50 00	500
3,000	do hardwood plank	do	40 00	1,200	45 00	135	35 00	105	60 00	180	70 00	210	40 00	120	22 00	66	70 00	210	50 00	150	100 00	300	60 00	190 00	70 00	210	100 00	300
5,000	Lbs. wrought iron, including bolts, spikes, straps, &c.	per lb.	0 12	600	0 12	600	0 15	750	0 16	800	0 20	1,000	0 25	1,250	0 12	600	0 15	750	0 15	750	30 00	1,500	0 18	900 00	0 20	1,000	0 25	1,250
1,000	Lbs. cast iron	do	0 06	60	0 07	70	0 09	90	0 13	130	0 20	200	0 20	200	0 10	100	0 12	120	0 12	120	0 20	200	0 15	150 00	0 15	150	0 25	250
Total			2,699,620		1,688,915		2,043,090		2,034,640		1,948,730		1,939,100		1,169,156		2,048,270		3,082,070		1,800,500		997,892 50		1,042,635		3,078,170	

Date of receipt of tenders, 18th March, 1875.

CONTRACT No. 15.—1st SET.

282

CANADIAN PACIFIC RAILWAY.—Cross Lake to Lake of the Woods.—Tender for Works.—Schedule of Quantities and Prices.

Frechette.		Sifton & Ward.		Bowie & Gough.		Wallace & Campbell.		Bowles & Cotton.		Wardrop & Ross.		Rocque & O'Hanly.		C. Lewis.		Munson & Co.		Brown, Ryan, Purcell & Co.		M. Murphy & Co.		H. F. Sharp.		Robinson & Robinson.		
Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.
\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	
25,000	10 00	5,000	30 00	15,000	40 00	20,000	50 00	25,000	40 00	20,000	55 00	27,500	75 00	37,500 00	85 00	42,500	30 00	15,000	20 00	10,000	25 00	12,500	40 00	20,000	40 00	
800	50 00	1,000	50 00	1,000	50 00	1,000	60 00	1,200	30 00	600	60 00	1,200	150 00	3,000 00	140 00	2,800	20 00	400	20 00	30 00	30 00	600	10 00	200	200	
4,500	70 00	3,500	150 00	7,500	80 00	4,000	120 00	6,000	160 00	8,000	200 00	10,000	100 00	5,000 00	80 00	4,000	160 00	8,000	160 00	8,000	80 00	4,000	150 00	7,500	7,500	
1,500,000	2 50	1,500,000	2 50	1,500,000	1 20	720,000	2 50	1,500,000	4 00	2,400,000	2 00	1,200,000	1 04	624,000 00	1 08	648,000	3 75	2,250,000	2 75	1,650,000	2 40	1,440,000	2 00	1,200,000	1,200,000	
40,000	1 00	40,000	1 00	40,000	0 60	24,000	1 50	60,000	1 00	40,000	1 00	40,000	0 75	30,000 00	0 80	32,000	2 00	80,000	1 00	40,000	1 10	44,000	1 25	50,000	50,000	
324,000	0 32	238,0 0	0 30	270,000	0 26	231,000	0 40	360,000	0 50	450,000	0 45	405,000	0 23	207,000 00	0 24	216,000	0 50	450,000	0 36	324,000	0 32	283,000	0 31	279,000	279,000	
6,000	0 30	6,000	0 25	5,900	0 35	7,000	0 30	6,000	0 30	6,400	0 50	10,000	0 23	4,600 00	0 25	5,000	0 60	12,000	0 50	10,000	0 32	6,400	0 30	6,000	6,000	
3,750	50 00	7,500	0 25	3,750	10 00	1,500	50 00	4,500	20 00	3,000	40 00	6,000	20 00	3,000 00	22 00	3,200	20 00	3,000	20 00	3,000	36 00	5,400	25 00	3,750	3,750	
1,800	2,000 00	2,000	2,000 00	2,000	2,000 00	2,000	1,600 00	1,600	800 00	800	2,000 00	2,000	1,500 00	1,500 00	2,000 00	2,000	40 00	1,600	1,000 00	1,000	2,000 00	2,000	1,500 00	1,500	1,500	
1,330	4 00	1,520	1 00	330	4 50	1,710	8 00	3,040	5 00	1,900	2 50	950	2 00	760 00	2 25	835	6 00	2,380	2 00	760	4 00	1,520	4 00	1,520	1,520	
49,500	55 00	50,250	25 00	13,750	90 00	49,500	40 00	22,000	160 00	55,000	120 00	60,000	63 75	35,062 50	60 00	33,000	180 00	99,000	120 00	66,000	60 00	33,000	90 00	49,500	49,500	
11,400	45 00	9,000	25 00	5,000	36 00	7,200	30 00	6,000	75 00	15,000	100 00	20,000	51 00	10,200 00	48 00	9,600	156 00	31,200	100 00	20,000	50 00	10,000	72 00	14,400	14,400	
8,360	35 00	5,600	25 00	4,000	32 00	5,120	20 00	3,200	60 00	9,600	70 00	11,200	34 00	5,440 00	32 00	5,120	120 00	19,200	80 00	12,800	35 00	5,600	48 00	7,630	7,630	
10,240	20 00	6,400	25 00	8,000	20 00	6,400	10 00	3,200	40 00	12,800	40 00	12,800	20 00	6,400 00	25 00	8,000	72 00	23,040	50 00	60,000	16 00	5,120	28 00	8,960	8,960	
8,100	15 00	6,750	25 00	7,250	10 00	4,500	5 00	2,250	25 00	11,250	25 00	11,250	12 00	5,400 00	12 00	5,400	50 00	22,500	30 00	13,500	8 00	3,600	16 00	7,200	7,200	
18,200	10 00	13,000	25 00	22,500	6 00	7,800	4 00	5,200	20 00	26,000	13 00	16,900	6 00	7,800 00	7 50	9,750	30 00	39,000	20 00	26,000	4 00	5,200	10 00	13,000	13,000	
3,500	4 00	4,000	5 00	5,000	2 00	2,000	2 50	2,500	3 00	3,000	1 00	1,000 00	1 00	1,000 00	1 25	1,250	3 00	3,000	2 00	2,000	4 00	4,000	2 00	3,000	3,000	
1,200	0 80	2,400	0 50	1,500	0 50	1,500	1 00	3,000	0 60	1,800	0 60	1,800	0 20	600 00	0 30	900	0 60	1,800	0 50	1,500	0 50	1,500	0 40	1,200	1,200	
7,700	0 50	11,000	0 40	8,800	0 20	6,600	0 80	17,600	0 50	14,000	0 50	11,000	0 20	4,400 00	0 30	6,600	0 50	11,000	0 40	8,800	0 45	9,900	0 30	6,600	6,600	
250	0 20	200	0 30	300	0 25	250	0 60	600	0 30	300	0 30	300	0 20	200 00	0 25	250	0 30	300	0 30	300	0 40	400	0 20	200	200	
8,500	0 20	1,200	0 30	1,800	0 20	1,200	0 50	3,000	0 40	2,400	0 25	1,500	0 20	1,200 00	0 20	1,200	0 30	1,200	0 20	1,200	0 35	2,100	0 20	1,200	1,200	
1,600	0 20	1,600	0 40	3,200	0 08	610	0 40	3,200	0 20	1,600	0 25	2,000	0 20	1,600 00	0 20	1,600	0 20	1,600	0 30	2,400	0 15	1,200	0 20	1,600	1,600	
600	50 00	750	30 00	450	18 00	270	50 00	7,500	40 00	600	40 00	600	40 00	600 00	50 00	750	60 00	750	25 00	375	0 40	600	20 00	300	300	
600	65 00	650	40 00	400	20 00	200	60 00	600	40 00	400	50 00	500	40 00	400 00	50 00	500	100 00	500	40 00	400	0 40	400	30 00	300	300	
150	70 00	210	40 00	120	22 00	60	70 00	210	50 00	150	100 00	300	60 00	180 00	70 00	210	100 00	300	40 00	120	0 60	180	40 00	120	120	
800	0 20	1,000	0 25	1,250	0 12	600	0 15	750	0 15	750	30 00	1,500	0 18	900 00	0 20	1,000	0 25	1,250	0 15	750	0 20	1,000	0 15	750	750	
130	0 20	200	0 20	200	0 10	100	0 12	120	0 12	120	0 20	200	0 15	150 00	0 15	150	0 25	250	0 10	100	0 12	120	0 10	100	100	
2,031,610		1,348,730		1,939,100		1,109,158		2,048,270		3,082,070		1,860,500		997,892 50		1,042,635		3,078,170		2,219,405		1,888,340		1,685,580	1,685,580	

Certified a true copy

(Signed)

F. BRAUN,

Secretary.

CONTRACT No. 15—2ND SET.

CANADIAN PACIFIC RAILWAY—Cross Lake to Lake of the Woods—Tender for Works; Schedule of Quantities and Prices.

Approximate Quantities	Description of Work.	Sifton & Farewell		Rogers & Co.		Brown & Ryan		Jos. Whitehead		Hunter & Murray		J. A. Henry & Co.		P. Purcell		A. P. Macdonald & Co.	
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.
		\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$
500	Acres, clearing	0 20	100	50 00	25,000	20 00	10,000	22 00	11,000	20 00	10,000	50 00	25,000	20 00	10,000	50 00	25,000
20	do close cutting	40 00	800	30 00	600	10 00	200	25 00	500	20 00	400	70 00	1,400	10 00	200	60 00	1,200
50	do grubbing (including side ditches and off-take drains)	75 00	3,750	100 00	5,000	100 00	5,000	160 00	8,000	75 00	3,750	200 00	10,000	80 00	4,000	100 00	5,000
320,000	Cubic yards, solid rock excavation	3 25	1,040,000	2 50	800,000	3 25	1,040,000	3 50	1,120,000	2 30	736,000	3 80	1,216,000	3 00	960,000	3 00	960,000
30,000	do loose rock excavation	1 50	45,000	1 00	30,000	1 00	30,000	2 00	60,000	1 00	30,000	2 00	60,000	1 00	30,000	2 50	75,000
30,000	do earth excavation (including borrowing)	0 40	32,000	0 55	44,000	0 45	36,000	0 40	32,000	0 30	24,000	0 50	40,000	0 40	32,000	0 46	36,800
20,000	do excavation in off-take ditches beyond Railway limits	0 40	8,000	0 60	12,000	0 45	9,000	0 40	8,000	0 40	8,000	0 59	12,800	0 40	8,000	0 41	8,200
10,000	Lineal feet, under-drains	75 00	7,500	50 00	5,000	15 00	1,500	20 00	2,000	40 00	4,000	65 00	6,500	5 00	500	50 00	5,000
425	do tunnelling for Railway (sectional area equal to 15 cubic yards to the lineal foot)	60 00	25,500	120 00	51,000	150 00	63,750	210 00	89,250	105 00	44,625	180 00	76,500	160 00	68,000	150 00	63,750
200	do 20 feet tunnels for streams (12 cubic yards per lineal foot)	55 00	11,000	100 00	20,000	120 00	24,000	168 00	33,600	85 00	17,000	156 00	31,200	130 00	26,000	120 00	24,000
160	do 16 feet tunnels for streams (8 cubic yards per lineal foot)	45 00	7,200	75 00	12,000	96 00	15,360	120 00	19,200	65 00	10,400	120 00	19,200	100 00	16,000	80 00	12,800
320	do 12 feet tunnels for streams (4 cubic yards per lineal foot)	28 00	8,960	50 00	16,000	80 00	25,600	68 00	21,760	40 00	12,800	80 00	25,600	85 00	27,200	48 00	15,260
450	do 8 feet tunnels for streams (2 cubic yards per lineal foot)	20 00	9,000	30 00	13,500	50 00	22,500	36 00	16,200	25 00	11,250	60 00	27,000	50 00	22,500	28 00	12,600
1,300	do 6 feet tunnels for streams (1 cubic yard per lineal foot)	15 00	19,500	25 00	32,500	30 00	39,000	20 00	26,000	16 00	20,800	50 00	65,000	30 00	39,000	30 00	39,000
1,000	Cubic yards, rip-rap	4 00	4,000	2 00	2,000	2 00	2,000	3 00	3,000	2 00	2,000	1 25	1,250	1 00	1,000	3 00	3,000
Total amount			1,222,310		1,068,600		1,323,910		1,450,510		935,025		1,616,450		1,244,400		1,286,710

NOTE.—The material to be distributed in accordance with the Specification and Note at foot of Bill of Works.

Date of receipt of Tenders, 22nd May, 1876.

Certified true copy.

(Signed) F. BRAUN,
Secretary.

CONTRACT No. 15.—3RD SET.

CANADIAN PACIFIC RAILWAY—Grading from Cross Lake to Keewatin, 36½ miles—Track-laying Selkirk to Keewatin, 112½ miles—Tender for work

Approximate Quantities	Description of Work.	John A. Green.		Martin & Charlton.		D. S. Booth.		A. Farewell.		Mullen & Whelan.		Kavanagh & Kervan.		Hunter & Murray.		McFarlane & McRae.		M. A. Cleveland.		Brown & Ryan.		J. Whitehead.		D. Hinkson.		Campbell & Kelly.		Reid, Davis & Henry.		Talbot.
		Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	
		\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$
500	Acres clearing..... per acre.	1 00	500	50 00	2,500	5 00	2,500	1 00	500	40 00	20,000	25 00	12,500	30 00	15,000	30 00	15,000	35 00	17,500	15 00	7,500	20 00	10,000	0 20	100	30 00	15,000	50 00	25,000	50 00
20	do close cutting..... do	50 00	1,000	25 00	500	20 00	400	40 00	800	40 00	800	30 00	600	40 00	800	60 00	1,200	40 00	800	5 00	100	25 00	500	40 00	800	50 00	1,000	70 00	1,400	80 00
50	do grubbing (including Side ditches and off-take drains)..... do	120 00	6,000	100 00	5,000	150 00	7,500	60 00	3,000	90 00	4,500	80 00	4,000	60 00	3,000	100 00	5,000	50 00	2,500	60 00	3,000	160 00	8,000	60 00	3,000	125 00	6,250	200 00	10,000	150 00
300,000	Cubic yards solid rock excavation..... p. cub. yd.	2 50	750,000	2 25	675,000	2 75	825,000	2 75	825,000	2 45	735,000	2 75	825,000	2 80	810,000	3 00	900,000	2 67	801,000	3 50	1,050,000	2 75	825,000	2 75	825,000	2 90	870,000	3 80	1,140,000	150 00
30,000	do loose rock excavation..... do	1 00	30,000	0 75	22,500	0 75	22,500	1 00	30,000	1 00	30,000	1 10	33,000	1 00	30,000	1 75	52,500	1 20	36,000	1 50	45,000	1 00	30,000	0 75	22,500	2 40	72,000	2 50	75,000	20 00
80,000	do earth excavation (including borrowing)..... do	0 35	28,000	0 50	40,000	0 40	32,000	0 30	24,000	0 50	40,000	0 42	33,600	0 40	32,000	0 40	32,000	0 40	32,000	0 45	36,000	0 36	28,800	0 30	21,600	0 50	40,000	0 40	32,000	0 00
20,000	do excavation in off-take ditches, beyond railway limits..... do	0 30	6,000	0 50	10,000	0 35	7,000	0 30	6,000	0 55	11,000	0 40	8,800	0 50	10,000	0 42	8,400	0 50	10,000	0 45	9,000	0 40	8,000	0 27	5,400	0 50	10,000	0 50	10,000	0 00
10,000	Lineal feet under-drains..... p. 100 lin. ft.	30 00	3,000	30 00	3,000	20 00	2,000	0 50	5,000	30 00	3,000	10 00	1,000	50 00	5,000	50 00	5,000	40 00	8,000	10 00	1,000	20 00	2,000	0 40	4,000	50 00	5,000	65 00	65,000	250 00
1 span	40 feet clear Howe truss..... per span.	1,500	1,500	1,200	1,200	2,000	2,000	2,000	2,000	1,500	1,500	1,500	1,500	1,500	1,500	2,000	2,000	1,600	1,600	1,600	1,600	1,680	1,680	1,500	1,600	1,600	3,000	3,000	1,600	1,600
42½	Lineal feet tunnelling for railway (sectional area equal to 15 cubic yards to the lineal foot)..... per lin. ft.	1 00	51,000	120 00	51,000	120 00	51,000	60 00	25,500	150 00	63,750	150 00	63,750	150 00	63,750	150 00	63,750	145 00	61,625	150 00	63,750	150 00	63,750	60 00	25,500	100 00	42,500	180 00	76,500	75 00
200	do twenty feet tunnels for streams (12 cubic yards per lineal foot)..... do	100 00	20,000	100 00	20,000	100 00	20,000	50 00	10,000	120 00	24,000	120 00	24,000	120 00	24,000	144 00	28,800	118 00	23,600	120 00	24,000	120 00	24,000	50 00	10,000	80 00	16,000	156 00	31,200	50 00
160	do sixteen feet tunnels for streams (8 cubic yards per lineal foot)..... do	75 00	12,000	75 00	12,000	70 00	11,200	40 00	6,400	100 00	16,000	80 00	12,800	90 00	14,400	80 00	12,800	88 00	14,080	80 00	12,800	83 00	14,080	40 00	6,400	60 00	9,600	120 00	19,200	40 00
320	do twelve feet tunnels for streams (4 cubic yards per lineal foot)..... do	40 00	12,800	60 00	19,200	45 00	14,400	25 00	8,000	60 00	19,200	60 00	19,200	50 00	16,000	52 00	16,640	56 00	17,920	60 00	19,200	52 00	16,640	30 00	9,600	40 00	12,800	80 00	25,600	30 00
450	do eight feet tunnels for streams (2 cubic yards per lineal foot)..... do	25 00	11,250	40 00	18,000	25 00	11,250	20 00	9,000	35 00	15,750	40 00	18,000	40 00	18,000	32 00	14,400	28 00	17,100	35 00	15,750	36 00	16,200	20 00	9,000	30 00	13,500	60 00	27,000	20 00
1,360	do six feet tunnels for streams (1 cubic yard per lineal foot)..... do	15 00	19,500	25 00	32,500	15 00	19,500	12 00	15,600	25 00	32,500	20 00	26,000	25 00	32,500	28 00	36,400	26 00	33,800	25 00	32,500	25 00	32,500	10 00	13,000	20 00	26,000	50 00	65,000	10 00
1,000	Cubic yards rip-rap..... p. cub. yd.	3 00	3,000	1 50	1,500	2 00	2,000	4 00	4,000	4 00	4,000	2 50	2,500	3 00	3,000	3 00	3,000	2 00	2,000	2 00	2,000	3 00	3,000	3 50	3,500	3 00	3,000	1 25	1,250	10 00
2,400	do bridge masonry..... do	12 00	28,800	16 00	38,400	10 00	24,000	20 00	48,000	17 50	42,000	25 00	60,000	16 00	38,400	24 00	57,600	18 00	35,200	25 00	60,000	13 00	31,200	18 00	43,200	15 00	36,000	18 00	43,200	10 00
380	do crib work in abutments and piers of bridges, (including timber and stone filling)..... do	6 00	2,280	6 00	2,280	4 00	1,520	5 00	1,900	7 50	2,850	5 00	1,900	10 00	3,800	5 00	1,900	8 00	3,040	5 00	1,900	5 00	1,900	6 00	2,280	5 00	1,900	3 25	1,235	10 00
Squared Timber in Trestle-work, Bridges, Culverts, &c.																														
500	Lineal feet, 16 inches by 12 inches..... per lin. ft.	0 50	250	0 50	250	0 60	300	0 60	300	0 60	300	0 60	300	0 55	2,750	0 64	320	0 56	280	0 60	300	0 40	22	0 60	300	0 80	400	1 00	500	0 00
84,000	do 15 do 12 do..... do	0 50	42,000	0 45	37,800	0 40	33,600	0 50	42,000	0 50	42,000	0 55	46,200	0 55	46,200	0 60	50,400	0 55	46,200	0 55	46,200	0 40	33,600	0 50	42,000	0 70	58,800	0 80	67,200	0 00
84,000	do 15 do 9 do..... do	0 45	37,800	0 40	33,600	0 45	37,800	0 40	33,600	0 45	37,800	0 50	42,000	0 50	42,000	0 45	37,800	0 50	42,000	0 40	33,600	0 40	33,600	0 55	46,200	0 55	46,200	0 70	58,800	0 00
1,000	do 12 do 12 do..... do	0 50	500	0 40	400	0 40	400	0 45	450	0 50	500	0 50	500	0 50	500	0 48	480	0 50	500	0 45	450	0 36	360	0 45	450	0 55	550	0 70	700	0 00
20,000	do 12 do 9 do..... do	0 36	7,200	0 30	6,000	0 36	7,200	0 35	7,000	0 40	8,000	0 45	9,000	0 40	8,000	0 36	7,200	0 50	500	0 45	450	0 36	360	0 45	450					

CONTRACT No. 15.—3RD SET.

206

Lake to Keewatin, 36½ miles—Track-laying Selkirk to Keewatin, 112½ miles—Tender for works—Schedule of Quantities and Prices.

Ireland.	Brown & Ryan.		J. Whitehead.		D. Hinkson.		Campbell & Kelly.		Reid, Davis & Henry.		Talbot & Jones.		O'Brien & Rider.		Sutton & Thompson.		C. C. Gregory.		Wright, Shacbril & Cross.		Hall, Lipe & McKechnie.		A. P. McDonald & Co.		Added from Return before Committee.							
	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Work as executed.			Work to be done.			
\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	Quantities.	Rate.	Amount.	Quantities.	Rate.	Amount.	
17,500 800	15 00 5 00	7,500 100	20 00 25 00	10,000 500	0 20 40 00	100 800	30 00 50 00	15,000 1,000	50 00 70 00	25,000 1,400	50 00 80 00	25,000 1,600	50 00 30 00	25,000 600	30 00 50 00	15,000 1,000	30 00 40 00	15,000 800	40 00 50 00	20,000 1,000	40 00 50 00	20,000 1,000	40 00 50 00	20,000 1,000	126 1/2 2 07	30 00 50 00	3,785 10 103 50	23 83 7 93	30 00 50 00	714 90 396 50		
2,500 801,000 36,000 32,000	60 00 3 50 1 50 0 45	3,000 1,050,000 45,000 36,000	100 00 2 75 1 00 0 36	8,000 825,000 30,000 28,800	60 00 2 75 0 75 0 30	3,000 825,000 22,500 24,000	125 00 2 90 2 40 0 50	6,250 870,000 72,000 40,000	200 00 3 80 2 50 0 40	10,000 1,140,000 75,000 32,000	150 00 2 50 1 50 0 40	7,500 750,000 45,000 32,000	100 00 2 50 1 00 0 50	5,000 750,000 30,000 40,000	80 00 2 75 1 75 0 37	4,000 825,000 52,500 29,600	50 00 3 60 1 00 0 60	2,500 1,100,000 30,000 48,000	200 00 2 30 1 00 0 40	10,000 690,000 30,000 32,000	70 00 2 85 1 50 0 35	3,500 855,000 45,000 28,000	100 00 2 25 1 50 0 35	5,000 675,000 45,000 28,000	100 00 2 25 1 50 0 35	5,000 675,000 45,000 28,000	224,306 0 37	82,993 22 1,433,111	0 37	530,252 18		
10,000 8,000 1,600	0 45 10 00 1,600 00	9,000 1,000 1,600	0 40 20 00 1,680 00	8,000 2,000 1,680	0 27 0 40 1,600 00	5,400 4,000 1,600	0 50 50 00 1,600 00	10,000 5,000 1,600	0 50 65 00 3,000 00	10,000 65,000 3,000	0 40 250 00 1,600 00	8,000 250,000 1,600	0 60 50 00 2,400 00	12,000 50,000 2,400	0 45 55 00 600 00	9,000 5,500 600	0 20 30 00 700 00	4,000 3,000 700	0 70 80 00 2,200 00	14,000 8,000 2,200	0 45 50 00 2,000 00	9,000 5,000 2,000	0 25 25 00 1,600 00	5,000 2,500 1,600	2,264 1,058	0 45 55 00	1,018 80 581 90	12,736 3,942	0 45 53 00	5,731 20 2,168 10		
61,625 23,600 14,080 17,920 17,100	150 00 120 00 80 00 60 00 35 00	63,750 24,000 12,800 19,200 15,750	150 00 120 00 83 00 52 00 36 00	63,750 24,000 14,080 16,640 16,200	60 00 50 00 40 00 30 00 20 00	25,500 10,000 6,400 9,600 9,000	100 00 80 00 60 00 40 00 30 00	42,500 16,000 9,600 12,800 13,500	180 00 156 00 120 00 80 00 60 00	76,500 31,200 19,200 25,600 27,000	75 00 50 00 40 00 30 00 20 00	31,875 10,000 6,400 9,600 9,000	120 00 100 00 75 00 50 00 30 00	51,000 20,000 12,000 16,000 13,500	30 00 26 00 18 00 14 00 9 00	12,750 5,200 2,880 4,480 4,050	120 00 80 00 60 00 32 00 24 00	51,000 16,000 9,600 10,240 10,800	131 00 114 00 88 00 52 00 40 00	55,675 22,800 14,080 16,640 18,000	130 00 110 00 80 00 53 00 30 00	51,250 22,000 12,800 16,610 13,500	135 00 96 00 61 00 36 00 18 00	57,375 19,200 10,240 11,520 8,100	332 200 200 18	30 00 26 00 14 00 9 00	9,960 00 5,200 00 2,800 00 4,518 00					
33,800 2,000 35,200	25 00 2 00 25 00	32,500 2,000 60,000	25 00 3 00 13 00	32,500 3,000 31,200	10 00 3 50 18 00	13,000 3,500 43,200	20 00 3 00 15 00	26,000 3,000 36,000	50 00 1 25 18 00	65,000 1,250 43,200	15 00 2 00 16 00	19,500 2,000 38,400	25 00 4 00 15 00	36,500 4,000 36,000	7 00 1 00 11 00	9,100 1,000 26,400	12 00 1 00 15 00	15,600 1,000 36,000	30 00 2 00 20 00	39,000 2,000 48,000	20 00 2 50 16 00	26,000 2,500 38,400	24 00 2 00 12 00	31,200 2,000 28,800	1,460 1,000 2,400	7 00 2 00 11 00	10,420 00 2,000 00 26,400 00					
3,040	5 00	1,900	5 00	1,900	6 00	2,280	5 00	1,900	3 25	1,235	4 00	1,500	5 00	1,900	2 75	1,045	3 00	1,040	5 00	1,900	4 25	1,615	3 00	1,140	1,070	2 75	2,942 50					
280 46,200 46,200 500 10,000 35,000 61,250 56,250 7,560	0 60 0 55 0 50 0 45 0 40 0 30 0 25 0 25 0 10	300 46,200 42,000 450 8,000 42,000 61,250 56,250 8,400	0 40 0 40 0 40 0 36 0 35 0 20 0 35 0 34 0 20	22 33,600 33,600 360 7,000 28,000 85,750 76,500 16,800	0 60 0 50 0 40 0 45 0 30 0 30 0 25 0 25 0 15	300 42,000 33,600 450 6,000 42,000 61,250 56,250 12,600	0 80 0 70 0 55 0 55 0 40 0 30 0 25 0 25 0 10	400 58,800 46,200 550 8,000 42,000 73,500 56,250 8,400	1 00 0 80 0 70 0 70 0 65 0 60 0 55 0 55 0 30	500 67,200 58,800 550 8,000 42,000 134,750 123,750 25,200	0 50 0 40 0 34 0 30 0 33 0 28 0 25 0 15 0 15	250 33,600 28,560 300 6,000 28,000 73,500 33,750 12,600	0 40 0 38 0 35 0 35 0 33 0 28 0 25 0 30 0 20	200 31,920 29,400 350 6,600 35,000 61,250 56,250 16,800	0 33 0 30 0 30 0 30 0 28 0 25 0 25 0 20	165 25,200 25,200 300 5,600 39,200 61,250 56,250 16,800	0 33 0 30 0 25 0 25 0 20 0 12 0 10 0 05	165 25,200 21,000 250 4,000 17,500 24,500 22,500 4,200	0 85 0 80 0 57 0 60 0 40 0 31 0 25 0 25 0 08	425 67,200 47,880 600 8,000 13,400 61,250 56,250 6,720	0 90 0 70 0 60 0 60 0 35 0 20 0 21 0 20 0 06	450 5,880 5,040 600 7,000 28,000 51,450 45,000 5,010	0 30 0 30 0 28 0 20 0 20 0 16 0 16 0 10	150 25,200 23,520 200 4,000 22,400 39,200 36,000 8,400	0 30 0 28 0 20 0 20 0 16 0 25 0 25 0 10	150 25,200 23,520 200 4,000 22,400 39,200 36,000 8,400	1,070 27,532 220	2 75 0 30 0 28	2,942 50 8,259 60 61 60			
93,600 15,810 5,760 21,060 2,800 13,320 35,610 3,700 2,320 280 22,575 40 50 50	0 40 0 35 0 30 0 25 0 20 0 25 0 15 0 12 0 10 0 25 40 00 50 00 75 00	104,000 15,400 4,800 20,250 2,800 17,800 29,700 1,800 2,900 250 25,800 50 50	0 34 0 35 0 35 0 20 0 20 0 35 0 25 0 20 0 20 0 30 40 00 50 00 40 00	93,600 15,400 5,600 16,200 2,800 25,900 49,500 3,000 2,900 300 25,800 40 40	0 35 0 35 0 30 0 25 0 20 0 35 0 15 0 12 0 10 0 15 35 00 50 00 80 00	91,000 15,400 4,800 20,250 2,800 14,800 29,700 1,800 2,900 150 22,575 50 50	0 50 0 45 0 40 0 30 0 20 0 20 0 20 0 15 0 10 0 40 30 00 50 00 100 00	130,000 19,800 6,400 21,300 2,800 25,900 49,500 3,000 2,900 400 19,350 50 50	0 70 0 60 0 68 0 66 0 60 0 50 0 50 0 45 0 40 0 30 45 00 50 00 125 00	182,000 30,300 10,880 53,460 8,400 14,800 39,600 2,250 2,900 300 20,025 50 50	0 15 0 15 0 15 0 15 0 12 0 10 0 10 0 10 0 10 0 10 45 00 50 00 60 00	30,300 6,600 2,400 12,160 1,680 7,400 19,800 1,500 2,030 100 16,125 40 75	0 25 0 25 0 25 0 20 0 20 0 20																			

																								Work as executed.						to be done.					
Rate.		Amount.		Rate.		Amount.		Rate.		Amount.		Rate.		Amount.		Rate.		Amount.		Rate.		Amount.		Rate.		Amount.		Rate.		Amount.					
\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$	\$ cts.	\$				
15 00	7,500	20 00	10,000	0 20	100	30 00	15,000	50 00	25,000	50 00	25,000	50 00	25,000	30 00	15,000	30 00	15,000	40 00	20,000	40 00	20,000	126 17	30 00	3,785 10	23 83	30 00	714 80								
5 00	100	25 00	500	40 00	800	50 00	1,000	70 00	1,400	80 00	1,600	30 00	600	50 00	1,000	40 00	800	50 00	1,000	50 00	1,000	2 07	50 00	103 50	7 91	50 00	396 50								
60 00	3,000	100 00	8,000	60 00	3,000	125 00	6,250	200 00	10,000	150 00	7,500	100 00	5,000	80 00	4,000	50 00	2,500	200 00	10,000	70 00	3,500	13 20	80 00	1,056 00	11 80	80 00	944 00								
3 50	1,050,000	2 75	825,000	2 75	825,000	2 90	870,000	3 80	1,140,000	2 50	750,000	2 50	750,000	2 75	825,000	3 60	1,100,000	2 30	690,000	2 85	855,000	342,376	2 75	941,534 00	18 270	2 75	503,992 50								
1 50	45,000	1 00	30,000	0 75	22,500	2 40	72,000	2 50	75,000	1 50	45,000	1 00	30,000	1 75	52,500	1 00	30,000	1 00	30,000	1 50	45,000	46,711	1 75	81,744 25	13,289	1 75	23,255 75								
0 45	36,000	0 36	28,800	0 30	21,600	0 50	40,000	0 40	32,000	0 40	32,000	0 50	40,000	0 37	29,600	0 60	48,000	0 40	32,000	0 35	28,000	224,306	0 37	82,993 22	1,433,111	0 37	530,252 18								
0 45	9,000	0 40	8,000	0 27	5,400	0 50	10,000	0 50	10,000	0 40	8,000	0 60	12,000	0 45	9,000	0 20	4,000	0 70	14,000	0 45	9,000	2,264	0 45	1,018 80	12,736	0 45	5,731 20								
10 00	1,000	20 00	2,000	0 40	4,000	50 00	5,000	65 00	65,000	250 00	250,000	50 00	50,000	55 00	5,500	30 00	3,000	80 00	8,000	50 00	5,000	1,058	55 00	581 30	3,942	55 00	2,168 10								
1,600 00	1,600	1,680 00	1,680		1,600	1,600 00	1,600	3,000 00	3,000	1,600 00	1,600	2,400 00	2,400	600 00	600	700 00	700	2,200 00	2,200	2,000 00	2,000	1,600 00													
150 00	63,750	150 00	63,750	60 00	25,500	100 00	42,500	180 00	76,500	75 00	31,875	120 00	51,000	30 00	12,750	120 00	51,000	131 00	55,675	130 00	51,250	332	30 00	9,960 00	44	30 00	1,320 00								
120 00	24,000	120 00	24,000	50 00	10,000	80 00	16,000	156 00	31,200	50 00	10,000	100 00	20,000	26 00	5,200	80 00	16,000	114 00	22,800	110 00	22,000														
80 00	12,800	80 00	14,080	40 00	6,400	60 00	9,600	120 00	19,200	40 00	6,400	75 00	12,000	18 00	2,880	60 00	9,600	88 00	14,080	80 00	12,800				200	26 00	5,200 00								
60 00	19,200	60 00	16,640	30 00	9,600	40 00	12,800	80 00	25,600	30 00	9,600	50 00	16,000	14 00	4,480	32 00	10,240	52 00	16,640	52 00	16,640				200	14 00	2,800 00								
35 00	15,750	35 00	16,200	20 00	9,000	30 00	13,500	60 00	27,000	20 00	9,000	30 00	13,500	9 00	4,050	24 00	10,800	40 00	18,000	30 00	13,500	18	9 00	162 00	502	9 00	4,518 00								
25 00	32,500	25 00	32,500	10 00	13,000	20 00	26,000	50 00	65,000	15 00	19,500	25 00	36,500	7 00	9,100	12 00	15,600	30 00	39,000	20 00	26,000				1,460	7 00	10,220 00								
2 00	2,000	3 00	3,000	3 50	3,500	3 00	3,000	1 25	1,250	2 00	2,000	4 00	4,000	11 00	26,400	15 00	36,000	20 00	48,000	16 00	38,400				1,000	2 00	2,000 00								
25 00	60,000	13 00	31,200	18 00	43,200	15 00	36,000	18 00	43,200	16 00	38,400	15 00	36,000												2,400	11 00	26,400 00								
5 00	1,900	5 00	1,900	6 00	2,280	5 00	1,900	3 25	1,235	4 00	1,520	5 00	1,900	2 75	1,045	3 00	1,040	5 00	1,900	4 25	1,615	1,070	2 75	2,942 50											
0 60	300	0 40	22	0 60	300	0 80	400	1 00	500	0 50	250	0 40	200	0 33	165	0 33	165	0 85	425	0 90	450														
0 55	46,200	0 40	33,600	0 50	42,000	0 70	58,800	0 80	67,200	0 40	33,600	0 38	31,920	0 30	25,200	0 30	25,200	0 80	67,200	0 70	5,880														
0 50	42,000	0 40	33,600	0 40	33,600	0 55	46,200	0 70	58,800	0 34	28,560	0 35	29,400	0 30	25,200	0 25	21,000	0 52	47,880	0 60	5,040														
0 45	450	0 36	360	0 45	450	0 55	550	0 70	700	0 30	300	0 35	350	0 30	300	0 25	250	0 60	600	0 60	600														
0 40	8,000	0 35	7,000	0 30	6,000	0 40	8,000	0 65	13,000	0 30	6,000	0 33	6,600	0 28	5,600	0 20	4,000	0 40	8,000	0 35	7,000														
0 30	42,000	0 20	28,000																																